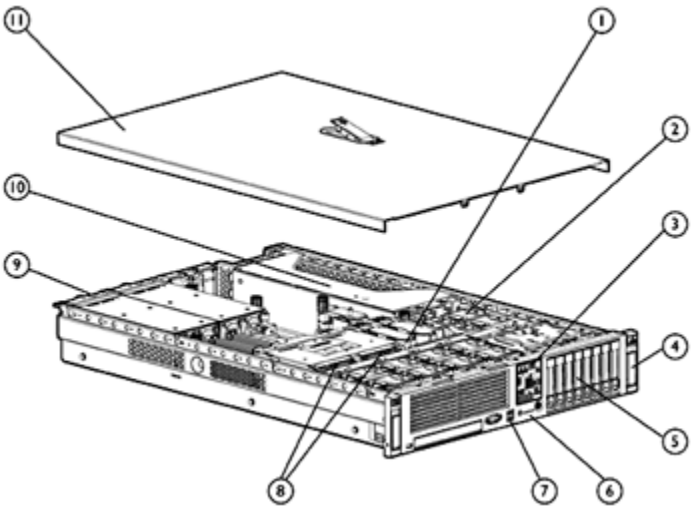
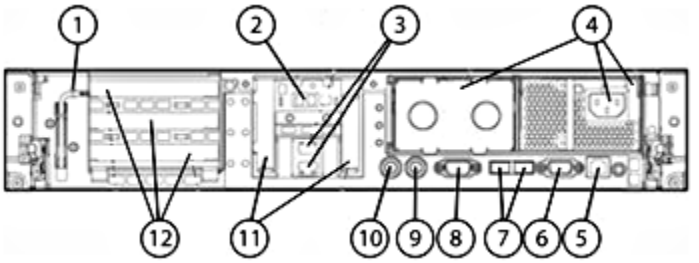
*Overview*

You have better things to do than worry about file storage. You're juggling multiple interfaces, security concerns, and shrinking backup windows—all while your users demand more storage space. You need scalable file storage that's powerful and easy to manage, and you need it soon.

A DL380 G5 Storage Server is the fast and easy way to add high-performance network file storage to your enterprise or workgroup IT environment, or to add data services to your SAN. The Microsoft Windows-powered operating system is pre-installed and HP All-in-One Storage Manager is included (except SAN Gateway), so you'll be up and running in minutes. It's a network attached storage (NAS) solution with multi-protocol support, so you can consolidate files or create a disk-based backup target. A single, centralized solution helps you spend less time on maintenance, and industry-standard building blocks protect your investment by providing compatibility with your network, applications, and data services.




**Front View:**

1. Eight sockets for PC2-5300 Fully Buffered DIMMs (DDR2-667)-low power memory standard
2. Hot-plug fans, full redundancy
3. Systems Insight Display
4. Quick release lever for rapid server access
5. Support for up to eight internal Small Form Factor hot plug hard drives
6. Front LEDs (show server status) and Unit Identification button/LED (for easy in rack server identification)
7. Two front USB ports (2 rear USB ports, 1 internal USB port)
8. Quad-Core Intel Xeon Processor(s)
9. Redundant hot plug power supplies
10. Three full-size PCIe expansion slots in standard expansion cage. Two additional low-profile PCIe slots embedded on the system board. Four slots available for use; one consumed by Smart Array controller.

**Front View:**

1. Torx service tool
2. Optional pass through cable door
3. Two Embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine
4. Hot plug power supply bays with redundant power supply
5. Integrated Lights-Out 2 (iLO 2) Remote management port
6. Video Port
7. Two USB 2.0 Ports
8. Serial Port
9. Keyboard Port
10. Mouse PS/2 Port
11. Two low-profile PCI Express x8 slots. Slot 1 is consumed by Smart Array P400 controller (SAN Gateway model only)

*Overview*

11. Quick removal access panel
12. Three full-size PCI Express slots in standard cage. One slot is consumed by Smart Array P800 controller (all models except SAN Gateway model)

**What is a ProLiant Storage Server?**

ProLiant Storage Servers are enhanced Windows-powered file and print server solutions for small or medium business, branch office, workgroup, or data center IT environments. These network storage devices are built on industry-standard HP ProLiant servers and come with either Microsoft Windows Storage Server 2003 R2 or Windows Unified Data Storage Server 2003 operating system pre-installed. Like many Network Attached Storage (NAS) devices, they support heterogeneous file serving environments and are pre-configured to install in minutes. And since they're Windows-based, network integration is easy, your antivirus and backup applications run right on the box, and management has a familiar look and feel. So you can add storage to your network quickly and spend less time on storage management, then get back to what matters most: running your business.

## What's New

- Create, migrate, manage, and protect shared storage without the need for storage expertise using All-in-One Storage Manager (ASM) Software, which is now included with DL380 G5 Storage Servers (except for the SAN Gateway model). ASM is designed for IT generalists and is like getting a storage expert in the box. It includes tools to quickly and easily migrate and manage data using automated best practice settings, and you can enable optional features within ASM by installing Microsoft iSCSI Software Target, HP Data Protector Express Software, and/or HP Storage Mirroring Software

  Go to: http://www.hp.com/go/simplestorage for more information.
- Quad-Core Intel® Xeon® E5430 2.66 GHz processors
- At least 4GB SDRAM standard
- Support for 1TB SATA and 450GB SAS drives with MSA60 bundle SKUs

## Highlights

ProLiant DL380 G5 Storage Servers deliver Enterprise-level performance, scalability and flexibility. Up to two quad-core processors, expandability to multiple terabytes of storage via external arrays, and a powerful new SAN gateway option make it the network storage solution of choice for SMB, workgroup, and small Enterprise environments.

- **Operating System:**
  - Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition with HP All-in-One Storage Manager(all models except SAN Gateway model)
  - Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition (SAN Gateway model)
- **Processor:**
  - Quad-Core Intel® Xeon® E5430 2.66 GHz
  - Single processor (all models except SAN Gateway model); two processors (SAN Gateway model)
- **Memory:**
  - 4GB (2 x 2GB) standard (all models except SAN Gateway model)
  - 8GB (4 x 2GB) standard (SAN Gateway model)
- **Storage Controller:**
  - Smart Array P800/512MB Controller (RAID 0/1/5/6) with BBWC and external expansion (all models except SAN Gateway model)
  - Smart Array P400/512MB Controller (RAID 0/1/5/6) with BBWC (SAN Gateway model)
- **Drive Support:**
  - Eight small form factor (SFF) hot-plug internal bays that support SAS or SATA HDDs
    - 2 x 72GB SAS SFF HDDs for mirrored OS (all models except 1.16TB SAS model)
    - 8 x 146GB SAS SFF (1.16TB SAS model)
  - External SAS or SATA HDD support via bundled HP StorageWorks 60 Modular Smart Array enclosures
    - 6 x 750GB SATA LFF (4.5TB SATA model)
    - 6 x 1TB SATA LFF (6TB SATA model)
    - 6 x 300GB SAS LFF (1.8TB SAS model)

*Overview*

- 6 x 450GB SAS LFF (2.7TB SAS model)
- Slimline DVD-ROM Drive (8x/24x)to support System Restore

- **Network Controller:**
  - Dual embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine
- **Expansion Slots:**
  - Two embedded half-height low profile x4 PCIe slots (one slot occupied by Smart Array P400/512MB controller on SAN Gateway model)
  - PCIe Riser: one x4 PCIe slot and two x8 PCIe slots (one slot occupied by Smart Array P800/512MB controller on all models except SAN Gateway model)
- **Redundancy:**
  - Hot-plug SAS/SATA hard disk drives
  - Hot plug redundant power supplies
  - Fully redundant hot plug fans (N+1)
- **Management:**
  - HP All-in-One Storage Manager Software (not compatible with SAN Gateway model)
    - File share creation and scheduled snapshots included
    - iSCSI features require optional installation of Microsoft iSCSI Software Target
    - Data protection features require optional installation of HP Data Protector Express Software
    - Streamlined data replication features require optional installation of HP Storage Mirroring Software
  - Microsoft Management Console (MMC)-based user interface
  - Remote system management via Remote Desktop or Telnet
  - Remote hardware management via Integrated Lights Out 2 (iLO 2) - Advanced License included
- **Form Factor:**
  - Rack (2U), (3.5-inch); Depth 26 inches (66 cm)
- **Warranty:**
  - Protected by HP Services and a worldwide network of resellers and service providers. Three-year Next Business Day, on-site limited global warranty (three years parts, three years labor, and three years on-site support). Certain restrictions and exclusions apply. SATA hard drives have a one-year warranty.

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| **Go from out-of-the-box to file serving in minutes, not hours.** | The Windows-powered operating system is pre-installed and user storage is pre-configured, so it's a quick, secure, and easy way to add storage and print services to your network or to add intelligent file and iSCSI services to your Fibre-Channel SAN. |
| **A single centralized file server platform to manage and protect** | Consolidate islands of direct-attached storage to one easy-to-use Windows platform or create a scalable disk-based backup or replication target. |
| **Multi-protocol file serving** | You can deploy in wide range of heterogeneous file serving environments with support for SMB/CIFS, NFS, HTTP, FTP, WebDAV, and AppleTalk file protocols. |
| **Add file access to your SAN or tier SAN block access** | The SAN Gateway model is a file and iSCSI gateway into a Fibre Channel SAN or Fibre Channel or SAS array, providing IP-based access to virtually unlimited storage. In addition to enabling file storage, it can help tier storage for application servers by creating block access via inexpensive Ethernet infrastructure. |
| **Seamless integration into your Windows environment** | It's running Windows, so it integrates natively into your Active Directory and DFS environments, runs your favorite antivirus or backup applications, and management via the Microsoft Management Console (MMC) has a familiar look and feel. |
| **Intelligent storage services** | Make more efficient use of storage space using the file de-duplicating Single-instance Storage (SIS) feature and enjoy the benefits of other storage-specific tools like Indexed search, SharePoint® Services support, Quotas, File Screening, Storage Reporting, and Distributed File System (DFS) Replication. |
| **Remote manageability** | You can manage and troubleshoot from almost anywhere at both the system level (with Remote Desktop or HTTPS) and at the hardware component level (using Integrated Lights-out 2). |

*Overview*

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| **HP ProLiant industry-standard hardware** | Relax--your investment is protected because you're not locked into proprietary hardware. The high-performance 2U rack mount platform supports up to 2 quad-core processors, up to 8 internal SFF drives, easy external expansion, and redundant power and cooling. |
| **Optional data services that integrate with HP All-in-One Storage Manager** | Upgrade to host block-based storage for Exchange, SQL or other applications with Microsoft® iSCSI Software Target; backup to disk, tape, or other removable media with HP Data Protector Express Software; and replicate data on a scheduled basis to another system using HP Storage Mirroring Software.<br><br>**NOTE:** The SAN Gateway model features the Microsoft Windows Unified Data Storage Server 2003 Enterprise x64 Edition O/S, which already includes iSCSI software target but does not support HP All-in-One Storage Manager. It does support other optional software, such as HP Data Protector Express and HP Storage Mirroring. |

**Operating System**

**Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models**

Microsoft Windows Storage Server 2003 R2, Standard x64 Edition

- 64-bit processing (compatible with 32-bit applications)
- Optimized for File Serving: Up to 20% faster file serving performance than a general-purpose Windows Server 2003 R2 installation on the same hardware.
- HP-enhanced File Server Management Console: Features the familiar look and feel of the Microsoft Management Console (MMC).
- HP Rapid Start-up Wizard: Simplifies and accelerates new device deployment by walking you through basic system settings step-by-step.
- Single-instance Storage (SIS): Recovers up to 35% of disk space by de-duplicating files and reducing the amount of redundant data stored. Identifies identical files, stores a single copy of the file in a central repository, and replaces the files with pointers to the file in the SIS common store.
- Search Enhancements: Indexing Service extracts the information from a set of documents and organizes it in a way that makes it quick and easy to access that information through the Search function for computers running Windows 2000 or Windows XP.
- File Server Resource Manager (FSRM): Provides both on-demand and scheduled reports detailing storage use, allows administrators to create and manage folder and volume quotas, and permits both name-based screening of files and allowing/disallowing file creation on specified folder trees.
- Windows SharePoint® Services: A powerful Web-based team collaboration environment that provides an integrated portfolio of collaboration and communication services designed to connect people, information, processes, and systems.
- Distributed File System (DFS) Management Console: Updated DFS namespace failover, failback and prioritization controls.
- Distributed File System Replication (DFS-R): State-based, multi-master replication engine that supports replication scheduling and bandwidth throttling. DFS-R uses a new compression algorithm that efficiently updates files over limited bandwidth networks by replicating only the changes needed to ensure global file consistency.
- Full support of Volume Shadow Copy Service, which creates point-in-time copies of files and folders at predetermined time intervals that can then be accessed from client computers.
- Unlimited Client Access Licenses (CALs) included
- Microsoft Services for Network File System (NFS)
- Support for multiple file serving protocols, including SMB/CIFS, NFS, HTTP, FTP, WebDAV, and AppleTalk
- Print Management Console: Manage multiple printers (license for unlimited printer support) from a single console, whether locally or over the WAN.
- Support for any number of SATA or SAS drives and multiple network ports

**SAN Gateway model**

Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition

Includes all Windows Storage Server 2003 R2, Standard x64 Edition features plus:

- Microsoft Windows iSCSI Software Target: Adds block storage capability and creates a single platform that delivers file, print, and application storage services, all over existing Ethernet networks. New wizards give you the ability to easily create and manage iSCSI targets, create and manage disks for storage, and implement backup and recovery support using snapshots.
- Microsoft Cluster Server (MSCS) license included
  - **NOTE:** The DL380 G5 SAN Gateway Storage Server may only be clustered with servers also running Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition operating system (HP recommends like hardware as well). Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition can not be clustered with ProLiant Storage Servers based on 32-bit (Windows Storage Server 2003 R2 or older) operating systems
-

*Standard Features*

- Storage Manager for SANs (SMfS): Natively provides basic SAN management (such as device discovery, LUN creation, and storage allocation) for SAN gateway installations. Moreover, SMfS enables shared storage solutions and clustering.
- Unified Share and Storage Management Snap-in: With a consistent and familiar interface, simplifies management of shares and volumes by unifying SMB and NFS share provisioning, integrating share and storage provisioning, and providing an overview of storage and shares.
- Remote Administration Enhancements: Key new functionality enables Windows Storage Server to be used and managed in environments that are not predominantly Windows-based.

For more information about this OS see:
http://www.microsoft.com/windowsserversystem/storage/wudss.mspx

**HP All-in-One Storage Manager Software**

This easy-to-use, integrated storage management tool works from an application point-of-view and can help you orchestrate the many aspects of your storage environment---even if you lack storage expertise. It's like having your own storage expert in the box.

**NOTE:** Not supported on DL380 G5 SAN Gateway model.

- Rapid startup tools for fast and easy installation and out-of-the box configuration
- File Share creation wizard for CIFS or NFS shares with storage allocation, directory quota management, and scheduled snapshots.
- Quota monitoring and alerting per share or application.
- Remote management via Microsoft Internet Explorer or Terminal Services
- Best practice and advanced dialog improvements to ASM wizards grant more control to those with more storage management experience
- Support for setup and management of both internal storage as well as supported direct attached MSA storage enclosures
- Supports management of tiered storage environments where both SAS and SATA hard drives are attached to the All-in-One Storage System either internally or in externally-attached HP StorageWorks MSA enclosures.
- You can use ASM to specify a dedicated, primary network--plus a secondary subnet--for your IP-based storage traffic
- Disaster recovery tools work in concert with backup applications to preserve storage subsystem settings in case they need restored after a system rebuild
- Provides end-to-end management and provisioning of iSCSI storage for non-clustered 32-bit and 64-bit Windows Server 2003 or Windows Server 2008 hosts (including derivatives like Windows Small Business Server 2008 and Windows Essential Business Server 2008) from the iSCSI Target all the way through to the host (Requires Microsoft iSCSI Software Target from HP)
- Provides management and provisioning of iSCSI storage for standards-compliant non-Windows iSCSI initiators such as VMWare, Linux, etc. (Requires Microsoft iSCSI Software Target from HP)
- Application data hosting and migration wizard using HP and Microsoft 'Best Practice' storage configurations for Microsoft Exchange 2003/2007 Storage Groups and Microsoft SQL Server 2000/2005/2008* databases (*SQL Server 2008 support requires installation of "SQL Server 2005 Backward Compatibility" option; file stream functionality not supported). (Requires Microsoft iSCSI Software Target from HP)
- Application-level capacity provisioning and online growth for shares, SQL Server and Exchange. SQL Server support includes data file and log directory provisioning and Exchange support includes Mailstore, Publicstore and log directory provisioning. (Requires Microsoft iSCSI Software Target from HP)
- Application data hosting and iSCSI Setup wizard for other 'User Defined' Application (Oracle, mySQL, VMware ESX, etc…) (Requires Microsoft iSCSI Software Target from HP)
- Data protection policy assignment (snapshots, backup, and HP StorageWorks Storage Mirroring replication) integrated into application migration and share creation wizards for data hosted on the system. (Requires HP Data Protector Express Software and/or HP

StorageWorks Storage Mirroring Software)

- Data Protector Express Virtual Library (D2D) device provisioning and space management as well as support for Data Protector Express D2D2Any add-on option. (Requires HP Data Protector Express Software)
- Integration with HP StorageWorks Storage Mirroring Software to accommodate asynchronous replication of file and block data to another system. (Requires HP StorageWorks Storage Mirroring Software)
- ASM agents now support domain servers (including Windows Server 2008, Small Business Server 2003 and Small Business Server 2008) as application host machines

**HP ASM Agent Application & OS Support Matrix**

| | Microsoft Windows Server 2003 SP1 | Microsoft Windows Small Business Server 2003 | Microsoft Windows Server 2008 | Microsoft Windows Essential Business Server 2008 |
|---|---|---|---|---|
| Microsoft Exchange 2003 SP1 | o | o | | |
| Microsoft Exchange 2007 | o* | o* | o* | o* |
| Microsoft SQL Server 2000 SP4 | o | o | | |
| Microsoft SQL Server 2005 SP2 | o | o | o | o |
| Microsoft SQL Server 2008 | o** | o** | o** | o** |

All application support requires installation of Microsoft iSCSI Sofware Target from HP (T4433A)
* Exchange 2007 is only supported on 64-bit Operating Systems
** SQL Server 2008 support requires installation of "SQL Server 2005 Backward Compatibility" option; file stream functionality not supported

**HP ASM Feature Support Matrix**

| | Microsoft Windows Server 2003 SP1 | Microsoft Windows Small Business Server 2003 | Microsoft Windows Server 2008 | Microsoft Windows Essential Business Server 2008 |
|---|---|---|---|---|
| Data Migration | o | o | o | o |
| Replication (HP Storage Mirroring Software) | o | o | o | o |
| Backup (HP Data Protector Express Software) | o | o | o | o |
| Virtual Library (HP Data Protector Express Software) | o | o | o *** | o *** |
| Application-aware snapshots | o | o | o | o |

*** Utilizing Virtual Library (D2D) functionality requires HP Data Protector Express Software v4.x to support Windows Server 2008

*Standard Features*

**Processors**

**Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models**

1 x Quad-Core Intel® Xeon® Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB)

**SAN Gateway model**

2 x Quad-Core Intel® Xeon® Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB)

**Cache Memory**

12 MB (2 x 6 MB) Level 2

**Chipset**

Intel® 5000P Chipset

**NOTE:** For more information regarding Intel chipsets, please see the following URL: http://www.intel.com/products/server/chipsets/.

**Memory**

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|---|---|
| Type | PC2-5300 Fully Buffered DIMMs (DDR2-667) with 4:1 and 2:1 interleaving available (interleaving requires identical DIMMs) |
| Memory Protection | Advanced ECC (multi-bit error protection), Online Spare, Mirroring, 4-way Interleaving |
| DIMM Sockets | 8 |
| **Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models** | |
| Standard | 4 GB (2 x 2GB) low-power |
| Maximum configuration | 32 GB |
| **SAN Gateway model** | |
| Standard | 8 GB (4 x 2GB) low-power |
| Maximum configuration | 64 GB |

**Network Controller**

Dual Embedded NC373i Multifunction Gigabit NICs with TCP/IP Offload Engine

**NOTE:** Supports the included Microsoft Windows Server 2003 Scalable Networking Pack, which includes TCP Chimney Offload, Receive-side Scaling (RSS), and NetDMA features

**NOTE:** Also supports RDMA through optional ProLiant Essentials Licensing Kits

**Expansion Slots**

**Embedded Slots**

| Slot Number | Bus Speed* | Bus Number** | Device Number*** | Hot Plug | PCI Voltage |
|---|---|---|---|---|---|
| 1 | x4 PCIe (x8 connector) | 6 | 0 | no | N/A |
| 2 | x4 PCIe (x8 connector) | 11 | 0 | no | N/A |

**NOTE:** One slot occupied by integrated Smart Array P400/512MB controller (SAN Gateway model only).

**NOTE:** Embedded slots support half-height low profile cards.

**PCIe Riser**

| Slot Number | Bus Speed* | Bus Number** | Device Number*** | Hot Plug | PCI Voltage |
|---|---|---|---|---|---|
| 3 | x4 PCIe (x8 connector) | 14 | 0 | no | N/A |
| 4 | x8 PCIe (x16 connector) | 23 | 0 | no | N/A |
| 5 | x8 PCIe (x16 connector) | 19 | 0 | no | N/A |

*Standard Features*

**NOTE:** One slot occupied by integrated Smart Array P800/512MB controller (Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models).
**NOTE:** Riser slots support full-size PCIe cards.

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| **Storage Controller** | **Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models**<br>HP Smart Array P800/512MB Controller with battery-backed write cache (BBWC)<br>• RAID 0/1/1+0/5 and RAID 6 with Advanced Data Guarding<br>• x8 2.5G PCIe host interface<br>• External expansion ports<br>**SAN Gateway model**<br>HP Smart Array P400/512MB Controller with battery-backed write cache (BBWC)<br>• RAID 0/1/1+0/5 and RAID 6 with Advanced Data Guarding<br>• x8 2.5G PCIe host interface<br>Fibre Channel SAN connectivity for all models requires a Host Bus Adapter (must be purchased separately). Please see 'SAN Compatibility' for more information. |

| | | |
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| **Storage** | Hard Drives | Internal:<br>• 2 x 72GB 3G SAS 10K SFF HDDs for mirrored OS (Base, 4.5TB SATA, 6TB SATA, 1.8TB SAS, 2.7TB SAS, and SAN Gateway models)<br>• 8 x 146GB 3G SAS 10K SFF HDDs (1.16TB SAS model)<br>External:<br>• 6 x 750GB SATA 7.2K LFF MDL HDDs installed in external MSA60 array enclosure (4.5TB SATA model)<br>• 6 x 1TB SATA 7.2K LFF MDL HDDs installed in external MSA60 array enclosure (6TB SATA model)<br>• 6 x 300GB 3G SAS 15K LFF DP ENT HDDs installed in external MSA60 array enclosure (1.8TB SAS model)<br>• 6 x 450GB 3G SAS 15K LFF DP ENT HDDs installed in external MSA60 array enclosure (2.7TB SAS model) |
| | Optical Drive | Slimline DVD-ROM Drive (8x/24x) |

| | | | |
|---|---|---|---|
| **Maximum Storage Capacity** (raw) | Internal (Hot Plug SFF SAS) | 1.168TB | 8 x 146GB SFF SAS HDDs |
| | Internal plus External | 97.16TB | 8 x 146GB SFF SAS int. + 96 x 1TB LFF SATA ext. |

*Standard Features*

**Interfaces**

| | |
|---|---|
| Serial | 1 |
| Pointing Device (Mouse) | 1 |
| Graphics | 1 |
| Keyboard | 1 |
| VGA | 2 (1 front, 1 back) |
| Network RJ-45 | 2 |
| iLO 2 remote management port | 1 |
| USB 2.0 Ports | 5 total: 2 front, 2 back, 1 internal<br>**NOTE:** Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html. |

**Graphics**

Integrated ATI ES1000 1280 x 1024 x 16M color (32MB video standard)

**Management**

HP StorageWorks All-in-One Storage Manager (ASM) Software

- File share creation wizard and scheduled snapshots included
- iSCSI features including "Host an Exchange Storage Group" and "Host a SQL Server Database" wizards require optional installation of Microsoft iSCSI Software Target (T4433A)
- Data protection features including support for backup of file shares or application stores to disk, tape, or other removable media using application-aware snapshots require optional installation of HP Data Protector Express Software (BB117BA)
- Streamlined data replication for file shares or application stores requires optional installation of HP Storage Mirroring Software (T5442A); Installable 60-day demo version included

**NOTE:** HP All-in-One Storage Manager Software does not support SAN and array storage and is incompatible with the DL380 G5 SAN Gateway Storage Server

Microsoft Management Console (MMC)-based user interface (also accessible via HTTPS)

Remote system management via Remote Desktop or Telnet

Integrated Lights-Out 2 featuring Integrated Remote Console with KVM over IP performance over shared network access (Advanced License included standard)

- Virtual Text Remote Console
- Virtual Power Button Control
- Integrated Remote Console
- Dedicated & full function shared network connectivity
- Browser, command line and scripted access
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) and Secure Shell security (SSH)
- OS independent hardware health status
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privilege
- Advanced license: upgrades the iLO 2 processor with comprehensive remote control including Virtual KVM graphical console, virtual media, and enterprise security.

**Form Factor**

Storage Server only: Rack (2U); Height 3.38-inch (8.59 cm); Depth: 26 inches (66 cm)
Storage Server plus MSA60 enclosure: Rack (4U)

*Standard Features*

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|---|---|
| **Industry Standard Compliance** | ACPI 2.0 Compliant<br>PCI 2.2 Compliant<br>WOL Support<br>Microsoft® Logo certifications<br>USB 2.0 Support |
| **Server Power Cords** | Two high voltage power cords (6 foot IEC C13 to C14) standard |
| **Power Supply** | Hot Plug Redundant, 800Watt, CE Mark Compliant |
| **UPS and PDU Power Cord Matrix** | Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units: ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf. |
| **System Fans** | Fully redundant hot plug fans ship standard (N+1). |
| **Rack Airflow Requirements** | **Rack 10000 series Cabinets**<br>The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.<br><br>**CAUTION:** If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:<br><br>• Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).<br>• Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).<br><br>**CAUTION:** Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.<br>**NOTE:** For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://h18000.www1.hp.com/products/servers/proliantdl380/index.html. |
| **Rack Kit** | The HP ProLiant DL380 G5 quick deploy rail system provides tool-free support for racks with square or round mounting holes (including Compaq/HP 7000*, 9000, 10000 and HP series), with an adjustment range of 24" - 36". The ambidextrous cable management arm can be mounted on either the left or right side for improved cable management.<br>*High Airflow Inserts (High Air Flow Rack Door Insert for the 7142 Rack (single) - PN: 327281-B21; or High Air Flow Rack Door Insert for the 7142 Rack (6-pack) - PN: 327281-B22) are required to support the HP ProLiant DL380 G5 in 7000 series racks. The DL380 G5 Cable Management Arm is not supported on 7000 series racks.<br>**NOTE:** Cable management arm must be removed to access hot-plug power supplies when the cable management arm is mounted on the right. |
| **Telco Rack Support** | DL380 G5 Telco Rack Kit:<br>Support for all 2-post Telco racks requires the use of the standard rack kit and an additional option kit from Rack Solutions (http://www.racksolutions.com/hp/) |

**Optional Software from HP for Storage Servers**

**NOTE:** DL380 G5 Storage Servers come with either Windows Storage Server 2003 R2 (Standard x64 Edition) or Windows Unified Data Storage Server (Enterprise x64 Edition) pre-installed; check software qualification with 64-bit Windows operating systems before purchase and installation

- **Microsoft® iSCSI Software Target** - Powerful iSCSI software target solution that provides affordable application storage provisioning, protection, and availability for small and medium office environments. The software adds block storage capability to ProLiant Storage Servers and creates a single platform that delivers file, print, and application storage services, all over existing Ethernet networks. It helps administrators consolidate storage capacity, improve storage utilization, minimize system downtime, simplify backup operations, enable rapid recovery, and provides high availability for key applications and services.

  Installing Microsoft iSCSI Software Target on a ProLiant Storage Server that supports HP All-in-One Storage Manager enables several features within ASM, including "Host an Exchange Storage Group" and "Host a SQL Server Database" wizards and the ability to provision and manage storage for standards-compliant non-Windows iSCSI initiators such as VMWare and Linux. Select ProLiant Storage Server models (including DL380 G5 Storage Servers except for the SAN Gateway model) are compatible with All-in-One Storage Manager; see: http://www.hp.com/go/simplestorage for more information.

  **NOTE:** Microsoft iSCSI Software Target is available for Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models only; the SAN Gateway model includes Microsoft iSCSI Software Target as part of its Windows Unified Data Storage Server 2003 (Enterprise x64 Edition) operating system.

  For more information:
  http://h18006.www1.hp.com/products/storageworks/ms_iscsi/index.html
- **HP Data Protector Express Software** - HP Data Protector Express is easy-to-use data protection and disaster recovery software. It is designed for smaller environments where ease of installation, use, and installation are needed. It enables backup to disk and/or tape of data stored on a ProLiant Storage Server and disaster recovery in the event of a serious incident. A ProLiant Storage Server can also act as the Backup Server and as a target for backup of data on other LAN connected machines or data protection can be integrated into an existing Data Protector Express installation.

  Installing HP Data Protector Express on a ProLiant Storage Server that supports HP All-in-One Storage Manager enables data protection features within ASM, including backup of file shares or application stores using application-aware snapshots to tape, disk, or other removable media target. All ProLiant Storage Servers support using Data Protector as a backup software solution and select models (including DL380 G5 Storage Servers except for the SAN Gateway model) are compatible with All-in-One Storage Manager; see: http://www.hp.com/go/simplestorage for more information.
  For more information on HP Data Protector Express Software:
  http://www.hp.com/go/dataprotectorexpress

- **HP StorageWorks Storage Mirroring Software** - HP StorageWorks Storage Mirroring offers a host-based application that performs remote copy over an IP LAN/WAN. Key features include asynchronous replication that can be scheduled to a fine granular level, Logical Unit Number (LUN), file or byte level. Other features include multiple replication configuration options including peer-to-peer and many-to-one. In addition, Storage Mirroring is a very cost effective disaster recovery alternative from one host to another within a LAN, storage center, or between direct attached storage in metro offices and regional centers. Additional configurations allow replication from small office environments to ensure business continuity without an outside IT staff.

  Installing HP Storage Mirroring on a ProLiant Storage Server that supports HP All-in-One Storage Manager enables replication features within ASM including streamlined setup of near real-time replication of file shares or application stores to a remote target. All ProLiant

Storage Servers support using HP Storage Mirroring as a host-based replication solution and select models (including DL380 G5 Storage Servers except for the SAN Gateway model) are compatible with All-in-One Storage Manager; see: http://www.hp.com/go/simplestorage for more information.

For more information on HP Storage Mirroring Software: http://h18006.www1.hp.com/products/storage/software/sm/index.html

- **HP Data Protector Software** - The HP Data Protector software is enterprise data protection and disaster recovery, ensuring recovery from any disruption. Data Protector integrates a variety of techniques to eliminate backup and recovery windows. The capabilities to eliminate planned downtime range from online backup and backup of open files to zero-downtime, zero-impact backup. The software provides industry-leading instant recovery as well as several disaster recovery alternatives to eliminate unplanned downtime, allowing recovery of entire data centers in minutes.

  Data Protector is enabling organizations to reduce costs by automating routine tasks to maximize the effectiveness of the data protection staff. For the price of an entry-level product, it provides the enterprise functionality customers need. Data Protector scales from single server to distributed enterprise, covering an extensive range of heterogeneous applications, operating environments and storage configurations with a single solution.

  All ProLiant Storage Servers support using Data Protector as their backup software solution.

  For more information on HP Data Storage Protector: http://h18006.www1.hp.com/products/storage/software/dataprotector/index.html
- **HP StorageWorks File Migration Agent** - HP FMA is an automated solution designed to help simplify Windows-based file, web, and application server administration in small business to enterprise environments. This is accomplished through policy-based file migration and archive to popular storage targets, including HP StorageWorks Reference Information Storage System (RISS), HP StorageWorks File System Extender, and NAS, via Common Internet File System (CIFS).

  The following Windows Storage Server features or add-ons are currently NOT supported by HP File Archiving software:

  **NOTE:** DL380 G5 SAN Gateway Storage Server with Windows Unified Data Storage Server 2003 (WUDSS) - (NOT SUPPORTED)
  **NOTE:** Single Instance Storage (SIS) - (NOT SUPPORTED)
  **NOTE:** DFS-Replication (DFS-R) - (NOT SUPPORTED)
  **NOTE:** File Server Resource Manager (FSRM) - Content Filter, & File Screening - (NOT SUPPORTED)

  For more information: http://h18006.www1.hp.com/products/storage/software/fma/

- **HP Systems Insight Manager Software** - HP SIM 5.x is the first unified server and storage management platform. Now, from a single management console, administrators can manage their complete HP server and storage environment with a feature rich, extensible and secure management tool set.
- HP SIM also serves as a central access point for ProLiant Essentials, Integrity Essentials, and Storage Essentials software options that deliver targeted functionality for these platforms. For more information: http://h18013.www1.hp.com/products/servers/management/hpsim/index.html
  - **Insight Management Agents** - Allow all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers.
- 

*Optional Software*

- **HP Storage Essentials NAS Manager Software** - Provides comprehensive Network Attached Storage (NAS) management capabilities for HP ProLiant Storage Servers. Visualize your distributed HP NAS solutions and centrally manage their capacity, performance, events, and dependencies to ensure NAS availability and performance and unify SAN and NAS management. For more information on the complete line of HP Storage Essential products go to: http://www.hp.com/go/storageessentials

*SAN Compatibility*

This information applies primarily to the DL380 G5 SAN Gateway Storage Server, which is designed and optimized for integration with a Fibre Channel SAN or storage array (Fibre Channel or SAS HBA not included). However, any DL380 G5 Storage Server model can be connected to a SAN or storage array by adding a recommended HBA.

| | |
|---|---|
| **Host Bus Adapter** (HBA) **Support** | HBA selection is left as your choice based on existing infrastructure and/or desired array support. Please see compatible HBAs listed in Step 5 of the product configuration wizard below.<br>**NOTE:** Please see the following URL for additional information about Fibre Channel HBAs: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html |

| | | |
|---|---|---|
| **SAN Support** | **HP StorageWorks Enterprise Virtual Array** (EVA) | http://h18006.www1.hp.com/products/storageworks/eva/index.html |
| | **HP StorageWorks Disk Array XP** | http://h18006.www1.hp.com/storage/xparrays.html |
| | **HP StorageWorks Modular Smart Array** (MSA) | http://h18006.www1.hp.com/storage/disk_storage/msa_diskarrays/index.html |

**HP ProLiant Storage Servers and third-party storage arrays/SAN interoperability statement**

HP acknowledges that some third party storage arrays/SAN environments have been successfully tested for interoperability with the HP ProLiant Storage Server or HP StorageWorks NAS products. HP will provide support for the HP ProLiant Storage Servers or HP StorageWorks NAS products when connected to third-party storage arrays, but HP will not provide support on third party storage arrays/SAN unless specifically called out in an HP Support contract. HP may support the third party SAN environment attached to HP ProLiant Storage Servers or the HP StorageWorks NAS products when specifically under contract with HP, but that SAN coverage does not extend to supporting the SAN connectivity of the third-party array.

If you call HP Services and the problem is determined to be caused by a third-party storage array or the storage arrays' connectivity into a non-HP supported SAN, you will be directed to contact the third-party storage array supplier for support. Please refer to the third-party supplier for information relating to specific support of their storage arrays with Windows Storage Server 2003 R2 and Windows Unified Data Storage Server 2003 platforms.

**Warranty**

All DL380 G5 Storage Servers come with a standard 3-3-3 warranty (3 years parts exchange, 3 years labor and 3 years onsite next business day response)

**Services Included with the Product**

One year of HP Software Support, standard 9x5 business hours (software technical support and software product and documentation updates).

**Service and Support Upgrade options**

- Response - Upgrade on-site response from next business day to same day 4-hours
- Coverage - Extend hours of coverage from 5 days x 9 hours to 7 days x 24 hours
- Duration - Select duration of coverage for a minimum period of 1year or multiple years

HP offers a portfolio of services ranging from Storage Design and Architecture that provides a complete multi-site design and implementation, to various levels of on-going maintenance support. Additionally the basic warranty service can be enhanced and/or HP Installation services can be purchased. Specifically HP Care Pack services include

| Product number(s) | Care Pack | Duration | Commercial reseller channels | Direct & Enterprise channels |
|---|---|---|---|---|
| AG815B<br>AG816B | HP Software Support for Storage, 9 x 5 | 1 year | Bundled | Bundled |
| | | 3 years | n/a | HA106A3 - 84N |
| | | 4 years | n/a | HA106A4 - 84N |
| | | 5 years | n/a | HA106A5 - 84N |
| | HP Software Support for Storage, 24 x 7 | 1 year | n/a | HA107A1 - 84N |
| | | 3 years | n/a | HA107A3 - 84N |
| | | 4 years | n/a | HA107A4 - 84N |
| | | 5 years | n/a | HA107A5 - 84N |
| | Support Plus for Storage | 1 year | UD572E | HA109A1 - 84N |
| | | 3 years | UD574E | HA109A3 - 84N |
| | | 4 years | n/a | HA109A4 - 84N |
| | | 5 years | n/a | HA109A5 - 84N |
| | | Post Warranty | UL100PE | n/a |
| | Support Plus 24 for Storage | 1 year | UD573E | HA110A1 - 84N |
| | | 3 years | UD575E | HA110A3 - 84N |
| | | 4 years | n/a | HA110A4 - 84N |
| | | 5 years | n/a | HA110A5 - 84N |
| | | Post Warranty | UL101PE | n/a |
| | Proactive 24 (P24) | 1 year | n/a | HA111A1 - 84N |
| | | 3 years | n/a | HA111A3 - 84N |
| | | 4 years | n/a | HA111A4 - 84N |
| | | 5 years | n/a | HA111A5 - 84N |
| | Critical Support (CS) | 1 year | n/a | HA112A1 - 84N |
| | | 3 years | n/a | HA112A3 - 84N |
| | | 4 years | n/a | HA112A4 - 84N |
| | | 5 years | n/a | HA112A5 - 84N |
| | 6 hour CTR | 1 year | UD576E | HA105A1 - 84N |
| | | 3 years | UD577E | HA105A3 - 84N |
| | | 4 years | n/a | HA105A4 - 84N |
| | | 5 years | n/a | HA105A5 - 84N |
| | Installation | n/a | U7986E | HA113A1 - 5LR |

| | | | | |
|---|---|---|---|---|
| AG817B<br>AN983A<br>AG819B<br>AN984A | HP Software Support for Storage, 9 x 5 | 1 year | Bundled | Bundled |
| | | 3 years | n/a | HA106A3 - 7KU |
| | | 4 years | n/a | HA106A4 - 7KU |
| | | 5 years | n/a | HA106A5 - 7KU |
| | HP Software Support for Storage, 24 x 7 | 1 year | n/a | HA107A1 - 7KU |
| | | 3 years | n/a | HA107A3 - 7KU |
| | | 4 years | n/a | HA107A4 - 7KU |
| | | 5 years | n/a | HA107A5 - 7KU |
| | Support Plus for Storage | 1 year | UH596E | HA109A1 - 7KU |
| | | 3 years | UH599E | HA109A3 - 7KU |
| | | 4 years | n/a | HA109A4 - 7KU |
| | | 5 years | n/a | HA109A5 - 7KU |
| | | Post Warranty | UL100PE | n/a |
| | Support Plus 24 for Storage | 1 year | UH597E | HA110A1 - 7KU |
| | | 3 years | UH600E | HA110A3 - 7KU |
| | | 4 years | n/a | HA110A4 - 7KU |
| | | 5 years | n/a | HA110A5 - 7KU |
| | | Post Warranty | UL101PE | n/a |
| | Proactive 24 (P24) | 1 year | n/a | HA111A1 - 7KU |
| | | 3 years | n/a | HA111A3 - 7KU |
| | | 4 years | n/a | HA111A4 - 7KU |
| | | 5 years | n/a | HA111A5 - 7KU |
| | Critical Support (CS) | 1 year | n/a | HA112A1 - 7KU |
| | | 3 years | n/a | HA112A3 - 7KU |
| | | 4 years | n/a | HA112A4 - 7KU |
| | | 5 years | n/a | HA112A5 - 7KU |
| | 6 hour CTR | 1 year | UH598E | HA105A1 - 7KU |
| | | 3 years | UH601E | HA105A3 - 7KU |
| | | 4 years | n/a | HA105A4 - 7KU |
| | | 5 years | n/a | HA105A5 - 7KU |
| | Installation | n/a | U7986E | HA113A1 - 5LR |
| AG771B | HP Software Support for Storage, 9 x 5 | 1 year | Bundled | Bundled |
| | | 3 years | n/a | HA106A3 - 7JY |
| | | 4 years | n/a | HA106A4 - 7JY |
| | | 5 years | n/a | HA106A5 - 7JY |
| | HP Software Support for Storage, 24 x 7 | 1 year | n/a | HA107A1 - 7JY |
| | | 3 years | n/a | HA107A3 - 7JY |
| | | 4 years | n/a | HA107A4 - 7JY |
| | | 5 years | n/a | HA107A5 - 7JY |
| | Support Plus for Storage | 1 year | UH066E | HA109A1 - 7JY |
| | | 3 years | UH069E | HA109A3 - 7JY |
| | | 4 years | n/a | HA109A4 - 7JY |

| | | | |
|---|---|---|---|
| | 5 years | n/a | HA109A5 - 7JY |
| | Post Warranty | UL100PE | n/a |
| Support Plus 24 for Storage | 1 year | UH067E | HA110A1 - 7JY |
| | 3 years | UH070E | HA110A3 - 7JY |
| | 4 years | n/a | HA110A4 - 7JY |
| | 5 years | n/a | HA110A5 - 7JY |
| | Post Warranty | UL101PE | n/a |
| Proactive 24 (P24) | 1 year | n/a | HA111A1 - 7JY |
| | 3 years | n/a | HA111A3 - 7JY |
| | 4 years | n/a | HA111A4 - 7JY |
| | 5 years | n/a | HA111A5 - 7JY |
| Critical Support (CS) | 1 year | n/a | HA112A1 - 7JY |
| | 3 years | n/a | HA112A3 - 7JY |
| | 4 years | n/a | HA112A4 - 7JY |
| | 5 years | n/a | HA112A5 - 7JY |
| 6 hour CTR | 1 year | UH068E | HA105A1 - 7JY |
| | 3 years | UH071E | HA105A3 - 7JY |
| | 4 years | n/a | HA105A4 - 7JY |
| | 5 years | n/a | HA105A5 - 7JY |
| Installation | n/a | U7986E | HA113A1 - 5LR |

**HP Software Support**

- Connect with HP Response Center engineers via telephone, electronic communication, or FAX for assistance in resolving software implementation or operations problems.
- HP Services provides corrective support to resolve identifiable and reproducible software product problems, and to help you identify problems that are difficult to reproduce.
- 9x5 coverage - Service is available during standard business hours, Monday through Friday (excluding holidays).

**HP Software Support, 24 x 7**

- Provides all the benefits of the regular Software Support, plus HP Services engineers are available around the clock 365 days per year.

**HP Support Plus**

- Increases the performance and availability of your IT infrastructure with comprehensive, consistent hardware and software services. HP Services engineers deliver onsite hardware support and over-the-phone software support 13 hours per day, 5 days per week.
- Encompasses the HP ProLiant Storage Server products, selected multi-vendor hardware and provides trouble-shooting software problems which range from the Storage Server 2003 operating system to the available utilities. In addition, this service makes software updates available to you at substantial savings.
- Provides recovery and re-configuration assistance of the HP ProLiant Storage Server using the recovery disk and your saved configuration file.

**HP Support Plus 24**

- Provides all the benefits of the regular Support Plus Care Pack, plus HP Services engineers are available to deliver onsite hardware and over-the-phone software support around-the-clock 365 days per year.

**HP Proactive 24**

- An integrated hardware and software support solution that combines efficient problem prevention with responsive technical

assistance whenever you need it.
- Improves the effectiveness of technologies across your IT infrastructure, and also, establishes a collaborative relationship between you and HP that strengthens your IT team and gives you rapid access to our expertise as issues arise

**Software Product Services**

- Standard HP warranty ensures Software media will be free of physical defects for a period of 90 days from delivery.
- These services are available to upgrade the warranty to (1 or 3) full year of 9 hours by 5 days (or 24x7) software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service.

**Hardware Product Services**

- Installation services
- On-site maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage
- RAID setup and performance consulting via statement of work
- Migration service consulting via statement of work

For additional hardware installation and maintenance information, please refer to the URLs listed below:
http://www.hp.com/hps/storage/ns_nas.html

HP offers a portfolio of services ranging from Storage Design and Architecture that provides a complete multi-site design and implementation, to various levels of on-going maintenance support. Additionally the basic warranty service can be enhanced and/or HP Installation services can be purchased.
Our Proactive 24 annuity service (with the SAN Module) allows continuous SAN/NAS growth by ensuring that your entire SAN/NAS is safely kept updated with analysis and recommendations on relevant, ongoing firmware (FW) changes and it ensures rapid resolution of complex SAN/NAS issues.

Our SAN Solution Service is a one-time review of your entire SAN/NAS and all the components (applications, HBAs, switches and FW, arrays etc) to ensure that all components are at tested, HP Certified levels. The HP SAN Design/Architecture Service provides as broad and as deep a review and recommendation as needed of how your SAN/NAS environment can be designed and implemented to meet your business storage needs.

The on-going support offerings include various response times (4 hour same day, next day, etc) as well as coverage periods (Monday - Friday, 24x7, 1 yr, 3 yr, etc). These services are available for both hardware and software to ensure all customer support needs are met and can be purchased from either value or volume channels.

Finally HP offers an optional migration service to assist the customer in moving to the newest product release. This may be in the form of a defined kit and service, or may alternatively be performed on a time & material basis.

HP Services allows the customer to leverage HP's experience in selecting and configuring the most widely used security features, and provides an environment that is immediately more available due to increased change control and significantly improved data security.
For more information on these and other service options, please contact any of our worldwide sales offices or visit our Web site at: http://www.hp.com/hps/storage/ns_nas.html

*Service and Support, HP Care Pack, and Warranty Information*

**Installation Services**

The service deployment activities will include:

- Unpacking the product, performing initial inspection, and setting up product hardware and power connectivity
- Connecting Customer-provided cables
- Setting the network address and setting appropriate domain variables in the NAS operating system
- Configuring the storage by creating a file share
- Configuring user mapping to make the share available for access
- Creating a sample file data copy or Snapshot

| Product number(s): | Care Pack | Duration | Commercial reseller channels | Direct & Enterprise channels |
|---|---|---|---|---|
| All | Installation for Storage (per event) | One time | Available | HA113A1 - 5D6 |

**Components**

The following brick level options/components do not have individual HP Care Pack Services. These items will be included in product HP Care Pack Services into which they are installed.

| | | | |
|---|---|---|---|
| Disk Drives | Tape Drives | CD/DVD ROM | SCSI Hubs in SBBs |
| Bus Converters | Backplane RAID Controllers | Power Supplies | Cabling |

In the following you will be guided through a series of steps to help you configure your ProLiant Storage Server.
**NOTE:** Options ship separately and are not factory integrated.

## Step 1 – Choose a Model

Select one of seven available DL380 G5 Storage Server models
**NOTE:** Models names are based on raw storage capacity, not available user storage.

| | | |
|---|---|---|
| **HP ProLiant DL380 G5 Storage Server Common Specifications** | **Processor** | Quad-Core Intel® Xeon® E5430 (2.66 GHz, 80 Watts, 1333 FSB) |
| | **Cache Memory** | 12 MB (2 x 6 MB) Level 2 |
| | **Memory Type** | PC2-5300 Fully Buffered DIMMs (DDR2-667) with Advanced ECC, mirrored and online spare memory capabilities |
| | **Network Controller** | Dual Embedded Dual NC373i Multifunction Gigabit NICs with TCP/IP Offload Engine |
| | **Expansion Slots** (embedded) | Two half-height low profile x4 PCIe slots |
| | **Additional Expansion Slots** (riser card) | PCIe Riser: one x4 PCIe slot and two x8 PCIe slots |
| | **Optical Drive** | Slimline DVD-ROM Drive (8x/24x) |
| | **Redundancy** | Hot plug redundant power supplies and fully redundant (N+1) hot plug fans |
| | **Remote Management** | iLO2 Port with Advanced License Pack Included |
| | **Factory Racking** | Factory integrates select Storage Servers with other HP products such as HP ProLiant Servers or Enterprise Virtual Arrays. **NOTE:** #0D1 will appear after the part number on the sales order if HP factory integration is supported. |
| **HP ProLiant DL380 G5 Base Storage Server** AG815B | **Operating System** | Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition with HP All-in-One Storage Manager |
| | **Number of Processors** | 1 |
| | **Memory** | 4 GB (2 x 2GB); up to 32GB supported |
| | **Storage Controller** | Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot |
| | **Internal Storage** | 2 x 72GB 3G SAS 10K SFF DP HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model |
| | **External Storage** | Support for a maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on storage requirements. |
| | **Form Factor** | Rack (2U), (3.5-inch) |
| **HP ProLiant DL380 G5 1.16TB SAS Storage Server** AG816B | **Operating System** | Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition with HP All-in-One Storage Manager |
| | **Number of Processors** | 1 |
| | **Memory** | 4 GB (2 x 2GB); up to 32GB supported |
| | **Storage Controller** | Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot |
| | **Internal Storage** | 8 x HP 146GB 3G SAS 10K SFF DP HDDs |
| | **External Storage** | Support for a maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on storage requirements. |
| | **Form Factor** | Rack (2U), (3.5-inch) |

*Product Configuration*

| | | |
|---|---|---|
| **HP ProLiant DL380 G5 4.5TB SATA Storage Server**<br>AG817B | **Operating System** | Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition with HP All-in-One Storage Manager |
| | **Number of Processors** | 1 |
| | **Memory** | 4 GB (2 x 2GB); up to 32GB supported |
| | **Storage Controller** | Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot |
| | **Internal Storage** | 2 x 72GB 3G SAS 10K SFF DP HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model |
| | **External Storage** | HP StorageWorks 60 Modular Smart Array enclosure with dual power supplies and 6 x 750GB SATA 7.2K LFF MDL HDDs<br>**NOTE:** 4.5TB (raw) of user storage is installed in the included MSA60 external enclosure<br>**NOTE:** Maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on storage requirements |
| | **Form Factor** | Rack (4U), (7-inch): DL380 G5 Storage Server (2U) plus MSA60 enclosure (2U) |
| **HP ProLiant DL380 G5 6TB SATA Storage Server**<br>AN983A | **Operating System** | Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition with HP All-in-One Storage Manager |
| | **Number of Processors** | 1 |
| | **Memory** | 4 GB (2 x 2GB); up to 32GB supported |
| | **Storage Controller** | Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot |
| | **Internal Storage** | 2 x 72GB 3G SAS 10K SFF DP HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model |
| | **External Storage** | HP StorageWorks 60 Modular Smart Array enclosure with dual power supplies and 6 x 1TB SATA 7.2K LFF MDL HDDs<br>**NOTE:** 6TB (raw) of user storage is installed in the included MSA60 external enclosure<br>**NOTE:** Maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on storage requirements |
| | **Form Factor** | Rack (4U), (7-inch): DL380 G5 Storage Server (2U) plus MSA60 enclosure (2U) |
| **HP ProLiant DL380 G5 1.8TB SAS Storage Server**<br>AG819B | **Operating System** | Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition with HP All-in-One Storage Manager |
| | **Number of Processors** | 1 |
| | **Memory** | 4 GB (2 x 2GB); up to 32GB supported |
| | **Storage Controller** | Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot |
| | **Internal Storage** | 2 x 72GB 3G SAS 10K SFF DP HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model |
| | **External Storage** | HP StorageWorks 60 Modular Smart Array enclosure with dual power supplies and 6 x 300GB 3G SAS 15K LFF DP ENT HDDs<br>**NOTE:** 1.8TB (raw) of user storage is installed in the included MSA60 external enclosure<br>**NOTE:** Maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on storage requirements |

| | | |
|---|---|---|
| | **Form Factor** | Rack (4U), (7-inch): DL380 G5 Storage Server (2U) plus MSA60 enclosure (2U) |
| **HP ProLiant DL380 G5 2.7TB SAS Storage Server**<br>AN984A | **Operating System** | Microsoft Windows Storage Server 2003 Release 2, Standard x64 Edition with HP All-in-One Storage Manager |
| | **Number of Processors** | 1 |
| | **Memory** | 4 GB (2 x 2GB); up to 32GB supported |
| | **Storage Controller** | Smart Array P800/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot |
| | **Internal Storage** | 2 x 72GB 3G SAS 10K SFF DP HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model |
| | **External Storage** | HP StorageWorks 60 Modular Smart Array enclosure with dual power supplies and 6 x 450GB 3G SAS 15K LFF DP ENT HDDs<br>**NOTE:** 2.7TB (raw) of user storage is installed in the included MSA60 external enclosure<br>**NOTE:** Maximum of eight MSA60 or four MSA70 enclosures per Smart Array P800 controller. MSA enclosures can be intermixed depending on customer storage requirements |
| | **Form Factor** | Rack (4U), (7-inch): DL380 G5 Storage Server (2U) plus MSA60 enclosure (2U) |
| **HP ProLiant DL380 G5 SAN Gateway Storage Server**<br>AG771B | **Operating System** | Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition |
| | **Number of Processors** | 2 |
| | **Memory** | 8 GB (4 x 2GB); up to 64GB supported |
| | **Storage Controller** | Smart Array P400/512MB BBWC Controller (RAID 0/1/1+0/5/6); occupies single PCIe slot |
| | **Internal Storage** | 2 x 72GB 3G SAS 10K SFF DP HDDs (for mirrored OS internal to server); No internal hard drives designated for user storage shipped with this model |
| | **External Storage** | Designed for attachment to XP, EVA, MSA2000 or Fibre Channel SAN via Fibre-channel or SAS HBA (not included)<br>**NOTE:** This model is primarily intended for use as a clustered SAN gateway, but can support direct attached storage with addition of a Smart Array P800 controller and MSA 60/70 enclosures. |
| | **Form Factor** | Rack (2U), (3.5-inch) |

## Step 2 - Add Another Processor

You can add a second processor to the Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models.
**NOTE:** The SAN Gateway model comes standard with two processors

| | | |
|---|---|---|
| **Processor** | Quad-Core Intel® Xeon® Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB) | 458575-B21 |

## Step 3 - Add More Memory

| | | |
|---|---|---|
| **Memory** | **NOTE:** Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models come standard with 4 GB (2 x 2GB) of low power memory and are expandable to 32GB. The SAN Gateway model comes standard with 8GB (4 x 2GB) of low power memory and is expandable to 64GB | |
| | 2 GB FBD PC2-5300 2 x 1 GB Low Power Single Rank Kit | 461826-B21 |
| | 4 GB FBD PC2-5300 2 x 2 GB Low Power Dual Rank Kit | 461828-B21 |
| | 8 GB FBD PC2-5300 2 x 4 GB Low Power Dual Rank Kit | 466440-B21 |
| | 1 GB FBD PC2-5300 2 x 512 MB Single Rank Kit | 397409-B21 |
| | 2 GB FBD PC2-5300 2 x 1 GB Dual Rank Kit | 397411-B21 |
| | 4 GB FBD PC2-5300 2 x 2 GB Dual Rank Kit | 397413-B21 |
| | 8 GB FBD PC2-5300 2 x 4 GB Dual Rank Kit | 397415-B21 |
| | 16 GB FBD PC2-5300 2 x 8 GB Dual Rank Kit | 413015-B21 |
| | 64 GB FBD PC2-5300 8 x 8 GB Dual Rank Kit | 495604-B21 |

## Step 4 - Add Network Adapters

**NOTE:** DL380 G5 Storage Servers support only PCIe expansion cards.

Dual Embedded NC373i Multifunction Gigabit Server Adapters with TCP/IP Offload Engine standard. Select additional cards for higher performance and further redundancy.

**NOTE:** Multifunction Server Adapters (including the embedded NC373i) support the installed Microsoft Windows Server 2003 Scalable Networking Pack, which enables TCP Chimney offload, Receive-side Scaling (RSS), and Network Direct Memory Access (NetDMA) features.

**NOTE:** Multifunction Server Adapters also support RDMA through optional ProLiant Essentials Licensing Kits.

| | | |
|---|---|---|
| **Network Adapters** | HP NC110T PCI Express Gigabit Server Adapter | 434905-B21 |
| | HP NC360T PCI Express Dual Port Gigabit Server Adapter | 412648-B21 |
| | HP NC364T PCI Express Quad Port Gigabit Server Adapter | 435508-B21 |
| | HP NC373F PCI Express Multifunction Gigabit Server Adapter | 394793-B21 |
| | HP NC373T PCI Express Multifunction Gigabit Server Adapter | 394791-B21 |
| | HP NC380T PCI Express Dual Port Multifunction Gigabit Server Adapter | 394795-B21 |
| | HP NC510F PCIe 10 Gigabit Server Adapter<br>**NOTE:** A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510F adapter | 414126-B21 |
| | HP NC510C PCIe 10 Gigabit Server Adapter<br>**NOTE:** A minimum of 1 gigabyte (1 GB) of server memory is required per each NC510C adapter | 414129-B21 |

## Step 5 – Add More Storage

**NOTE:** DL380 G5 Storage Servers support only PCIe expansion cards.

DL380 G5 Storage Servers (except the SAN Gateway model) come standard with one installed Smart Array P800 controller for internal drives and easy external expansion; the SAN Gateway model comes standard with one Smart Array P400 controller. Select additional controllers from the below list only if required.

**NOTE:** Please consult specifications for available expansion slots (which varies by model) when ordering addition storage controllers.

*Product Configuration*

DL380 G5 Storage Servers accommodate an internal maximum of 2 operating system SFF HDDs plus 6 data SFF HDDs (note that the 1.16TB SAS model comes standard with eight internal SAS drives that span both O/S and data; all other models come standard with two 72GB SFF O/S drives only).
**NOTE:** The DL380 G5 SAN Gateway Storage Server is primarily intended for use as a SAN/array gateway, but can support internal storage and/or direct attach storage with a Smart Array P800 controller and MSA50/60/70 enclosures. Conversely, all other models can support SAN/array connection via installation of a recommended Fibre Channel or SAS HBA.

| | | |
|---|---|---|
| **Storage Controllers** | **SAS Controllers** | |
| | **Smart Array E500 Controller** | |
| | Smart Array E500/256MB Controller | 435129-B21 |
| | **Smart Array P400 Controller** | |
| | HP Smart Array P400/256MB Controller | 405132-B21 |
| | HP Smart Array P400/512MB BBWC Controller | 411064-B21 |
| | 512MB Battery-backed cache upgrade<br>**NOTE:** Contains batter and memory module. For Smart Array P400 Controller. | 405148-B21 |
| | Battery-backed write cache upgrade<br>**NOTE:** Contains battery only. For Smart Array P400 Controller. | 383280-B21 |
| | Smart Array P400 Battery Attach Kit<br>**NOTE:** This option kit contains a 24" battery cable and adhesive material for installing a battery into the HP ProLiant DL380 G5 if a Smart Array P400 is integrated outside of the factory. For all solutions, please refer to the server QuickSpecs and User's Manual for detailed installation instructions. | 417836-B21 |
| | **Smart Array P800 Controller** | |
| | HP Smart Array P800/512 BBWC Controller | 381513-B21 |
| | **NOTE:** Please see the following QuickSpecs for Technical Specifications and additional information:<br>http://h18000.www1.hp.com/products/quickspecs/12700_div/12700_div.html (Smart Array E500 Controller)<br>http://h18000.www1.hp.com/products/quickspecs/12400_div/12400_div.html (Smart Array P400 Controller)<br>http://h18000.www1.hp.com/products/quickspecs/12616_div/12616_div.html (Smart Array P800 Controller) | |
| | **SAS HBAs** | |
| | HP SC44Ge Host Bus Adapter | 416096-B21 |
| | HP SC08Ge SAS HBA<br>**NOTE:** Supports MSA2012sa Modular Storage Arrays | 488765-B21 |
| | **NOTE:** Please see the following QuickSpecs for additional information:<br>http://h18004.www1.hp.com/products/quickspecs/12617_div/12617_div.html (SC44Ge HBA) | |
| | **SCSI HBAs** | |
| | HP SC11Xe Host Bus Adapter | 412911-B21 |
| | HP U320e SCSI Host Bus Adapter | AH627A |
| | **NOTE:** Please see the following QuickSpecs for Technical Specifications and additional information:<br>http://h18000.www1.hp.com/products/quickspecs/12566_div/12566_div.html (SC11Xe HBA) | |

*Product Configuration*

**Host Bus Adapters for Shared Storage**

The DL380 G5 SAN Gateway Storage Server is designed and optimized for integration with a SAN or storage array; however any DL380 G5 Storage Server model can be connected to a SAS storage array or Fibre Channel SAN or array by adding a recommended HBA.

**NOTE:** An HBA is not included as standard with any ProLiant Storage Server. HBA selection is left as your choice based on existing infrastructure and/or desired array support.

**NOTE:** DL380 G5 Storage Servers support only PCIe expansion cards.

**NOTE:** For the complete listing of Fibre Channel Host Bus Adapters, please see: http://h18006.www1.hp.com/storage/saninfrastructure/hba.html

| | |
|---|---|
| HP StorageWorks FC2142SR 4Gb PCIe HBA | A8002A |
| HP StorageWorks FC2242SR Dual Channel 4 Gb PCIe HBA | A8003A |
| HP StorageWorks FC1142SR 4Gb PCIe HBA | AE311A |
| HP StorageWorks FC1242SR Dual Channel 4 Gb PCIe HBA | AE312A |
| HP StorageWorks 81Q PCI-e FC HBA | AK344A |
| HP 82Q 8Gb Dual Port PCI-e FC HBA | AJ764A |
| HP StorageWorks 81E 8Gb SP PCI-e FC HBA | AJ762A |
| HP 82E 8Gb Dual-port PCI-e FC HBA | AJ763A |
| HP SC08Ge SAS HBA | 488765-B21 |

**External Storage Enclosures**

**HP StorageWorks Modular Smart Arrays**

| | |
|---|---|
| HP StorageWorks Modular Smart Array 50 Enclosure<br>**NOTE:** Rack-mountable 10-drive (2.5" 3G SAS/1.5G SATA) 1U enclosure with 3Gb/s SAS host connectivity and redundant power supplies. | 364430-B21 |
| HP StorageWorks 60 Modular Smart Array<br>**NOTE:** Rack-mountable 12-drive (3.5" 3G SAS/1.5G SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies. | 418408-B21 |
| HP StorageWorks MSA60 1.8TB SAS HDD Bundle (MSA60 w/12 146GB 15K SAS LFF HDD) | AG822A |
| HP StorageWorks MSA60 9TB SATA HDD Bundle (MSA60 w/12 750GB 15K SATA LFF HDD) | AG823A |
| HP StorageWorks MSA60 3.6TB SAS HDD Bundle (MSA60 w/12 300GB 15K SAS LFF HDD) | AG824A |
| **NOTE:** The MSA60 bundles are available in the Americas, Asia Pacific (AP) and Japan only. They are not available in Europe, Middle East and Africa. | |
| HP StorageWorks 70 Modular Smart Array<br>**NOTE:** Rack-mountable 25-drive (2.5" 3G SAS/1.5G SATA) 2U enclosure with 3Gb/s SAS host connectivity and redundant power supplies. | 418800-B21 |
| HP StorageWorks MSA70 1.8TB SAS HDD Bundle (MSA70 w/25 72GB 15K SAS SFF HDD) | AG825A |
| HP StorageWorks MSA70 3.6TB SAS HDD Bundle (MSA70 w/25 146GB 10K SAS SFF HDD) | AG893A |
| **NOTE:** The MSA70 bundles are available in the Americas, Asia Pacific (AP) and Japan only. They are not available in Europe, Middle East and Africa. | |
| HP StorageWorks 2012fc Single Controller Modular Smart Array | AJ742A |
| HP StorageWorks 2012fc Dual Controller Modular Smart Array | AJ743A |
| HP StorageWorks 2212fc Dual Enhanced Controller Modular Smart Array | AJ745A |
| HP StorageWorks 2000fc Modular Smart Array Controller | AJ744A |

| | | |
|---|---|---|
| | **NOTE:** All 2000fc series array enclosures require addition of a Fibre Channel Host Bus Adapter<br>**NOTE:** Please see the 2000fc Modular Smart Array QuickSpecs for additional options and configuration information at:<br>http://h18000.www1.hp.com/products/quickspecs/12991_div/12991_div.html (Worldwide) | |
| | HP 2012sa Single Controller Modular Smart Array | AJ752A |
| | HP 2012sa Dual Controller Modular Smart Array | AJ753A |
| | **NOTE:** All 2000sa series arrays require addition of a SC08Ge SAS Host Bus Adapter (488765-B21)<br>**NOTE:** Please see the Modular Smart Array 2000sa QuickSpecs for additional options and configuration information at:<br>http://h18000.www1.hp.com/products/quickspecs/13045_div/13045_div.html (Worldwide) | |
| | HP StorageWorks 2012i Single Controller Modular Smart Array | AJ746A |
| | HP StorageWorks 2012i Dual Controller Modular Smart Array | AJ747A |
| | HP StorageWorks 2000i Modular Smart Array Controller | AJ748A |
| | **NOTE:** Please see the 2000i Modular Smart Array QuickSpecs for additional options and configuration information at:<br>http://h18000.www1.hp.com/products/quickspecs/12992_div/12992_div.html (Worldwide) | |
| | Additional Fibre Channel SAN / Array Support: XP and EVA<br>**NOTE:** Requires addition of a Fibre Channel Host Bus Adapter<br>**NOTE:** Please see the Storage Array Systems QuickSpecs below for more information about configuration requirements | |
| | HP StorageWorks Enterprise Virtual Array Family<br>http://h18006.www1.hp.com/products/quickspecs/12408_div/12408_div.html<br>HP StorageWorks XP Disk Arrays<br>http://h18006.www1.hp.com/products/quickspecs/12072_div/12072_div.html | |
| **Hard Drives**<br>(Internal Expansion) | **SAS Enterprise (ENT) Drives 2.5" Drives, Hot Plug** | |
| | HP 146GB 3G SAS 10K SFF SP HDD | 431958-B21 |
| | HP 146GB 3G SAS 10K SFF DP HDD | 418367-B21 |
| | HP 72GB 3G SAS 10K SFF SP HDD | 375861-B21 |
| | HP 72GB 3G SAS 10K SFF DP HDD | 384842-B21 |
| | HP 72GB 3G SAS 15K SFF SP HDD | 431935-B21 |
| | HP 72GB 3G SAS 15K SFF DP HDD | 418371-B21 |
| | HP 36GB 3G SAS 15K SFF SP HDD | 431933-B21 |
| | HP 36GB 3G SAS 15K SFF DP HDD | 418369-B21 |
| | **NOTE:** Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:<br>http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide) | |
| | **SATA Entry (ETY) Drives 2.5", Hot Plug** | |
| | HP 120GB 3G SATA 5.4K SFF ETY HDD | 458924-B21 |
| | HP 60GB SATA 5.4K SFF HDD | 379306-B21 |

| | | |
|---|---|---|
| | **NOTE:** SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.html (Worldwide) | |
| **Hard Drives** (External Expansion) | **SAS Enterprise (ENT) Drives 3.5", Hot Plug** | |
| | HP 450GB 3G 15K 3.5" DP SAS ENT HDD | 454232-B21 |
| | HP 300GB 3G 15K SAS 3.5" SP HDD | 431944-B21 |
| | HP 300GB 3G 15K SAS 3.5" DP HDD | 416127-B21 |
| | HP 146GB 3G 15K SAS 3.5" SP HDD | 375872-B21 |
| | HP 146GB 3G 15K SAS 3.5" DP HDD | 384854-B21 |
| | HP 72GB 3G 15K SAS 3.5" SP HD | 375870-B21 |
| | HP 72GB 3G 15K SAS 3.5" DP HDD | 384852-B21 |
| | HP StorageWorks MSA2 146GB 3G 15K 3.5 inch Dual-port SAS HDD (MSA2000 series only) | AJ735A |
| | HP StorageWorks MSA2 300GB 3G 15K 3.5 inch Dual-port SAS HDD (MSA2000 series only) | AJ736A |
| | **SAS Midline (MDL) Drives 3.5", Hot Plug** | |
| | HP 1TB 7.2K 3.5" DP SAS MDL HDD | 461137-B21 |
| | HP 750GB 7.2K 3.5" DP SAS MDL HDD | 461135-B21 |
| | **SAS Enterprise (ENT) Drives 2.5" Drives, Hot Plug** | |
| | HP 146GB 3G SAS 10K SFF SP HDD | 431958-B21 |
| | HP 146GB 3G SAS 10K SFF DP HDD | 418367-B21 |
| | HP 72GB 3G SAS 10K SFF SP HDD | 375861-B21 |
| | HP 72GB 3G SAS 10K SFF DP HDD | 384842-B21 |
| | HP 72GB 3G SAS 15K SFF SP HDD | 431935-B21 |
| | HP 72GB 3G SAS 15K SFF DP HDD | 418371-B21 |
| | HP 36GB 3G SAS 15K SFF SP HDD | 431933-B21 |
| | HP 36GB 3G SAS 15K SFF DP HDD | 418369-B21 |
| | **NOTE:** Please see the SAS Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide) | |
| | **SATA Midline (MDL) Drives 3.5", Hot Plug** | |
| | HP 1TB 3G SATA 7.2K 3.5" MDL HDD | 454146-B21 |
| | HP 750GB 3G SATA 7.2K 3.5" MDL HDD | 458930-B21 |
| | HP 500GB 3G SATA 7.2K 3.5" MDL HDD | 458928-B21 |
| | HP 250GB 3G SATA 7.2K 3.5" MDL HDD | 458926-B21 |
| | HP StorageWorks MSA2 500GB 7.2K 3.5 inch SATA HDD (MSA2000 series only) | AJ738A |
| | HP StorageWorks MSA2 750GB 7.2K 3.5 inch SATA HDD (MSA2000 series only) | AJ739A |
| | **SATA Entry (ETY) Drives 2.5", Hot Plug** | |
| | HP 120GB 3G SATA 5.4K SFF ETY HDD | 458924-B21 |
| | HP 60GB SATA 5.4K SFF HDD | 379306-B21 |

**NOTE:** SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/12091_div/12091_div.html (Worldwide)

## Step 6 - Add Optional Software

**HP x64 Windows Unified Data Storage Server OS Upgrade**

Software-only Microsoft Windows Unified Data Storage Server 2003, Enterprise x64 Edition operating system upgrade for select legacy ProLiant Storage Server SAN Gateway models running Microsoft Windows Storage Server 2003 (Enterprise Edition only): T5322A

- DL380 G5 SAN Storage Server (AG456A)
- DL585 Storage Server (AE454A)
- DL585 Storage Server (383719-B21)
- DL585 Storage Server (393973-B21)
- DL380 G4 SAN Storage Server (AE438A)
- DL380 G4 SAN Storage Server (371227-B21)

This upgrade requires a clean install and includes all Windows Unified Storage Server 2003, Enterprise x64 Edition features, including Microsoft iSCSI Software Target, Microsoft Cluster Server (MSCS), and 64-bit processing.
**NOTE:** Check for HP and 3rd-party software qualification with 64-bit Windows operating systems before purchase and installation

**NOTE:** This upgrade is incompatible with ProLiant Storage Servers running Windows Storage Server 2003 R2 Standard Edition (either x86 or x64)

**Microsoft® iSCSI Software Target from HP**

**NOTE:** Microsoft iSCSI Target Software is compatible only with ProLiant Storage Servers running Windows Storage Server 2003 R2, Standard x86 or x64 Edition (including the DL380 G5 Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models). The DL380 G5 SAN Gateway model already includes Microsoft iSCSI Software Target as part of its Windows Unified Data Storage Server 2003 operating system.

Microsoft iSCSI Software Target adds block storage capability to ProLiant Storage Servers and creates a single platform that delivers file, print, and application storage services, all over existing Ethernet networks. It is a powerful iSCSI software solution that provides affordable application storage provisioning, protection, and availability for small and medium office environments. It helps administrators consolidate storage capacity, improve storage utilization, minimize system downtime, simplify backup operations, enable rapid recovery, and provides high availability for key applications and services.

Installing Microsoft iSCSI Software Target on a ProLiant Storage Server that supports HP All-in-One Storage Manager enables several features within ASM, including "Host an Exchange Storage Group" and "Host a SQL Server Database" wizards and the ability to provision and manage storage for standards-compliant non-Windows iSCSI initiators such as VMWare and Linux. Select ProLiant Storage Server models (including DL380 G5 Storage Servers except for the SAN Gateway model) are compatible with All-in-One Storage Manager; see: http://www.hp.com/go/simplestorage for more information.

Microsoft iSCSI Target Software 1 LTU T4433A

**NOTE:** For more information on Microsoft® iSCSI Software Target from HP: http://h18006.www1.hp.com/products/storageworks/ms_iscsi/index.html

**HP Data Protector Express Software**

Data Protector Express has a very simple product structure yet easily enables powerful and robust data protection and disaster recovery. The base product is the Data Protector Express Backup Server. Installing this creates the Data Protector Express Storage Domain. Options are installed to add other machines to the Data Protector Express Storage Doman for protection and to add additional functionality.
Installing HP Data Protector Express (Backup Server) on a ProLiant Storage Server that supports HP All-in-One Storage Manager enables data protection features within ASM, including backup of file shares or application stores using application-aware snapshots to tape, disk, or other removable media target. All ProLiant Storage Servers support using Data Protector as a backup software solution and select models (including DL380 G5 Storage Servers except for the SAN Gateway model) are compatible with All-in-One Storage Manager; see: http://www.hp.com/go/simplestorage for more information.

| | |
|---|---|
| HP Data Protector Express 4.0 Backup Server (base product) | BB117BA |

**NOTE:** Please see the HP Data Protector Express QuickSpecs for additional information on adding options to HP Data Protector Express software: http://h18000.www1.hp.com/products/quickspecs/12337_div/12337_div.html (Worldwide)

**HP Data Protector Express Software Options**

| | |
|---|---|
| HP Data Protector Express 4.0 Network Server Agent | BB121BA |
| HP Data Protector Express 4.0 Network Server Agent 3 pack | BB122BA |
| HP Data Protector Express 4.0 Application Online Agent | BB125BA |
| HP Data Protector Express 4.0 Bare Metal Disaster Recovery Option | BB128BA |
| HP Data Protector Express 4.0 D2Any2Any Option | BB130BA |
| HP Data Protector Express 4.0 Drive Expansion Option | BB133BA |

**NOTE:** For more information on HP Data Protector Express Software: http://www.hp.com/go/dataprotectorexpress

**HP StorageWorks Storage Mirroring Software**

HP StorageWorks Storage Mirroring (SM) Software is an ideal entry host-based software product for IP networks. SM does not require high bandwidth Fibre Channel networks, high capacity replication and zero down time service levels. Storage Mirroring provides near real-time full application or file recovery up to the last byte replication. SM is an excellent choice for low bandwidth; low storage volume changes and meets business recovery goals within tens of minutes or hours. The immediate return on investment is realized in the reduced management cost associated with branch or small offices networks.

**NOTE:** An installable 60-day demo of Storage Mirroring Software is included with all ProLiant Storage Servers.

Installing HP Storage Mirroring on a ProLiant Storage Server that supports HP All-in-One Storage Manager enables replication features within ASM including streamlined setup of near real-time replication of file shares or application stores to a remote target. All ProLiant Storage Servers support using HP Storage Mirroring as a host-based replication solution and select models (including DL380 G5 Storage Servers except for the SAN Gateway model) are compatible with All-in-One Storage Manager; see: http://www.hp.com/go/simplestorage for more information.

**Special note about Microsoft iSCSI Software Target and replication:**
All HP ProLiant Storage Servers include the Distributed File System Replication (DFS-R) feature in the pre-installed Windows Storage Server 2003 R2 and

Windows Unified Data Storage Server 2003 operating systems. DFS-R is a file-based replication technology that only replicates files when they are closed. Microsoft iSCSI Software Target does not close the virtual disk files (.vhd files) while they are in use, and so these files are not replicated during normal usage when replicating using DFS-R. Therefore, if iSCSI Software Target virtual disk files need to be replicated, DFS-R should not be used, and HP StorageWorks Storage Mirroring software should be considered instead. Storage Mirroring software asynchronously replicates each write into the file system to a secondary system, and therefore it can be used to effectively replicate iSCSI Software Target virtual disk files.

**NOTE:** DL380 G5 Storage Servers include a desktop link to a white paper with more information on replicating iSCSI targets.

| | |
|---|---|
| StorageWorks Storage Mirroring Media Kit v5 | T5437A |
| StorageWorks Storage Mirroring NAS Edition 1 LTU | T5442A |
| StorageWorks Storage Mirroring NAS Edition 10 LTU | T5443A |

**NOTE:** For more information go to the HP StorageWorks Storage Mirroring website at: http://h18006.www1.hp.com/products/storage/software/sm/index.html

## Step 7 - Add a Backup Solution

**Tape Drives**

**NOTE:** For the complete listing of Tape Drive offerings, please see: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html For recommended tape drive offerings for this ProLiant server see the following:

**USB Tape Drives**

| | |
|---|---|
| HP StorageWorks 1U USB Rack-Mount Kit with one DAT 160 USB Tape Drive | AG703A |

**SAS Tape Drives**

**NOTE:** HP recommends purchasing the HP SC44Ge HBA (416096-B21) for a dedicated SAS HBA for tape

| | |
|---|---|
| HP StorageWorks DAT 160 SAS Internal Tape Drive<br>**NOTE:** HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution. | Q1587A |
| HP StorageWorks Ultrium 448 SAS Internal Tape Drive<br>**NOTE:** HP recommends combining this tape drive with the 1U SAS Rack-Mount kit (AE459A) for a complete rack-mount solution. | DW085A |
| HP LTO-3 Ultrium 920 SAS Internal Tape Drive | EH978A |
| HP StorageWorks 1U SAS Rack-mount kit with one LTO-4 Ultrium 1760 | EH946A |

**NOTE:** Please refer to the "Tape Drives, Tape Autoloaders & Tape Libraries" table in the Storage section of this document for a list of SAS controllers with tape support.

**SCSI Tape Drives**

**NOTE:** HP recommends purchasing the HP SC11Xe HBA (412911-B21) for a dedicated SCSI HBA for tape.

| | |
|---|---|
| HP StorageWorks 1U Rack-mount kit with one Ultrium 448 (Carbonite) | DW028B |
| HP StorageWorks 1U SCSI Rack-mount kit with one Ultrium 920 | EH903A |
| HP StorageWorks 3U SCSI Rack-Mount with 1 LTO-4 Ultrium 1840 Tape Drive | EH926A |

**NOTE:** Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for additional options such as controllers, media, and other related items: http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html (Worldwide) http://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html (Worldwide)

| | | |
|---|---|---|
| | For an up-to-date listing of the latest O/S and software support details for HP Ultrium tape drives, please visit: http://www.hp.com/go/connect. | |
| | **Rack-Mount Tape Drive Enclosures** | |
| | HP StorageWorks 1U SCSI Rack-Mount kit<br>**NOTE:** The 1U Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with multiple Single-Ended and LVD SCSI tape drives including the DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232, Ultrium 448 and Ultrium 920 tape drives. | A7445B |
| | HP StorageWorks 1U USB Rack-Mount Kit<br>**NOTE:** The 1U USB Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the DAT 24 USB, DAT 40 USB and DAT 72 USB tape drives. | A8007A |
| | HP StorageWorks 1U SAS Rack-Mount Kit<br>**NOTE:** The 1U SAS Rack-Mount Kit can support up to (2) half-height tape drives and is compatible with the Ultrium 448 SAS and Ultrium 920 SAS tape drives.<br>**NOTE:** Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated. | AE459A |
| | **NOTE:** Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional information regarding these kits: http://h18000.www1.hp.com/products/quickspecs/10854_div/10854_div.html (Worldwide) | |
| **HP D2D Backup System** | HP StorageWorks D2D120 Backup System<br>**NOTE:** 2TB of Disk Storage. | EH884A |
| | HP StorageWorks D2D120 Backup System with Data Protector Express Software Kit<br>**NOTE:** 2TB of Disk Storage. | EH924A |
| | HP StorageWorks D2D130 Backup System<br>**NOTE:** 3TB of Disk Storage. | EH950A |
| | HP StorageWorks D2D130 Backup System with Data Protector Express Software Kit<br>**NOTE:** 3TB of Disk Storage | EH951A |
| | HP StorageWorks D2D130 Backup System with LTO-3 Ultrium 920 SAS Tape Drive<br>**NOTE:** 3TB of Disk Storage. | EH952A |
| | HP StorageWorks D2D2503i Backup System<br>**NOTE:** 3TB of Disk Storage. | EH945A |
| | HP StorageWorks D2D4004i Backup System<br>**NOTE:** 4.5TB of Disk Storage. | EH938A |
| | **NOTE:** Please see the HP D2D Backup Systems QuickSpecs for additional information: http://h18000.www1.hp.com/products/quickspecs/12651_div/12651_div.html (Worldwide) | |

*Product Configuration*

| | | |
|---|---|---|
| **Tape Autoloaders** | **HP StorageWorks DAT Autoloader** | |
| | HP StorageWorks DAT 72x10 tape autoloader | AE313B |
| | **HP StorageWorks 1/8 Tape Autoloader** | |
| | HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SAS Tape Autoloader | AK377A |
| | HP StorageWorks 1/8 G2 LTO-4 Ultrium 1760 SCSI Tape Autoloader | AJ816A |
| | HP StorageWorks 1/8 Ultrium 920 G2 Tape Autoloader | AH165A |
| | HP StorageWorks 1/8 G2 LTO-3 Ultrium 920 SAS Autoloader | AH558A |
| | HP StorageWorks 1/8 Ultrium 448 G2 Tape Autoloader | AH164A |
| | HP StorageWorks 1/8 G2 Tape Autoloader Rack Kit | AH166A |
| | **NOTE:** Required to install the 1/8 G2 Autoloaders in a standard 19-inch rack; includes rails and rackmount instructions | |
| | **NOTE:** Please reference the 1/8 Tape Autoloader QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs | |

| | | |
|---|---|---|
| **Tape Libraries** | **HP StorageWorks MSL2024 Tape Library** | |
| | HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 SCSI Drive Library | AJ033A |
| | HP StorageWorks MSL2024 1 LTO-4 Ultrium 1840 4GB FC Library | AJ034A |
| | HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SAS Drive Library | AK378A |
| | HP StorageWorks MSL2024 1 LTO-4 Ultrium 1760 SCSI Drive Library | AJ817A |
| | HP StorageWorks MSL2024 1 Ultrium 960 Drive Library | AG115A |
| | HP StorageWorks MSL2024 1 Ultrium 960 4GB FC Library | AG326B |
| | HP StorageWorks MSL2024 1 LTO-3 Ultrium 920 SAS Drive Library | AH559A |
| | HP StorageWorks MSL2024 1 Ultrium 920 Drive Library | AH169A |
| | HP StorageWorks MSL2024 1 Ultrium 448 Drive Library | AG116A |
| | **HP StorageWorks MSL4048 Tape Library** | |
| | HP StorageWorks MSL4048 1 Ultrium 920 SAS Drive Library | AH560A |
| | HP StorageWorks MSL4048 1 Ultrium 920 Drive Library | AH171A |
| | HP StorageWorks MSL4048 1 Ultrium 960 Drive Library | AG322A |
| | HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SAS Drive Library | AK380A |
| | HP StorageWorks MSL4048 2 LTO-4 Ultrium 1760 SCSI Drive Library | AJ818A |
| | HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 SCSI Drive Library | AJ035A |
| | HP StorageWorks MSL4048 1 LTO-4 Ultrium 1840 4GB FC Library | AJ036A |
| | **NOTE:** Please reference the MSL Tape Library QuickSpecs at: http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at: http://www.hp.com/go/ebs | |

## Step 8 - Add UPS, Power, and Rack Options

**NOTE:** All ProLiant DL380 G5 Storage Server models include a standard rail kit for HP racks and two high voltage (220V/10A) power cords (6 foot IEC C13 to C14) standard

| | | |
|---|---|---|
| **Uninterruptible Power Systems - Rack** | HP R1.5 VA 1U UPS INTL | AF418A |
| | HP R1.5 VA 1U UPS JPN | AF421A |
| | HP R1.5 VA 1U UPS NA | AF419A |
| | HP R/T2200 2-U ERM | AF412A |

*Product Configuration*

| | | |
|---|---|---|
| **Power Cords** | Nema 5-15P to IEC320-C13, North America low voltage (6 ft/2 m) | AF556A |
| | Power Cord, Euro, 10A 250V Straight (6 ft/2 m) | AF568A |
| | Power Cord, UK/HK/SING, 10A 250V Straight (6 ft/2 m) | AF570A |
| | Power Cord, Danish, 10A 250V Straight (6 ft/2 m) | AF566A |
| | Power Cord, Swiss, 10A 250V Straight (6 ft/2 m) | AF565A |
| | Power Cord, Italian/Chile, 10A 250V Straight (6 ft/2 m) | AF571A |
| | Power Cord, South Africa, 10A 250V Straight (8 ft/2.5 m) | AF567A |
| **HP Monitored Power Distribution Unit (PDU)** | 17.3 kVA Monitored PDU Model S2324 | AF503A |
| | 8.6 kVA Monitored PDU Model S1324 | AF504A |
| | 16.6 kVA Monitored PDU Model S2140 | AF505A |
| | 8.3 kVA Monitored PDU Model S1140 | AF506A |
| | 22 kVA Monitored PDU Model S2316 | AF507A |
| | 11 kVA Monitored PDU Model S1316 | AF508A |
| | 14.7 kVA Monitored PDU Model S2132 | AF509A |
| | 7.3 kVA Monitored PDU Model S1132 | AF510A |
| | 4.9kVA Monitored PDU model S124 | AF514A |
| | 7.3kVA Monitored PDU model S132 | AF515A |
| **USB Options** | HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver) | DC172B |
| | 1.44MB External USB Floppy Drive | DC141B |
| | HP USB 04 Standard Keyboard | DT528A#ABA |
| | HP 1GB USB 2.0 Floppy Drive Key | 442085-B21 |
| | HP 256MB USB 2.0 Floppy Drive Key | 442084-B21 |
| **HP Rack 5000 Series** (Graphite Metallic) | HP 5642 Rack-Unassembled<br>**NOTE:** Please see the HP Rack 5642 QuickSpecs for additional part numbers and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12074_div/12074_div.html (Worldwide)<br>**NOTE:** For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower. | 358254-B21 |

*Product Configuration*

| | | |
|---|---|---|
| **HP Rack 10000 G2 Series** (Carbon/ Graphite Metallic) | 10642 G2 (42U) Rack Cabinet – Pallet | AF001A |
| | 10642 G2 (42U) Rack Cabinet – Shock Pallet | AF002A |
| | 10642 G2 (42U) Rack Cabinet – Crated | AF003A |
| | 10642 G2 (42U) Rack Cabinet, with Extension – Shock Pallet | AF004A |
| | 10636 G2 (36U) Rack Cabinet – Pallet | AF011A |
| | 10636 G2 (36U) Rack Cabinet – Shock Pallet | AF012A |
| | 10636 G2 (36U) Rack Cabinet – Crated | AF013A |
| | 10636 G2 (36U) Rack Cabinet, with Extension – Shock Pallet | AF014A |
| | 10622 G2 (22U) Rack Cabinet - Pallet | AF021A |
| | 10622 G2 (22U) Rack Cabinet - Shock Pallet | AF022A |
| | 10842 G2 (42U) 800mm Wide Rack Cabinet - Pallet | AF041A |
| | 10842 G2 (42U) 800mm Wide Rack Cabinet - Shock Pallet | AF042A |
| | 10647 G2 (47U) Rack Cabinet - Pallet | AF031A |
| | **NOTE:** It is mandatory to use a shock pallet when shipping racks with equipment installed. | |
| | **NOTE:** Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.html (Worldwide) | |
| | **NOTE:** For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower. | |
| **HP Rack 10000 Series** (Graphite Metallic) | HP S10614 (14U) Rack Cabinet – Shock Pallet | 292302-B22 |
| | **NOTE**: xxxxxx-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels). | |
| | **NOTE**: It is mandatory to use a shock pallet in order to ship racks with equipment installed. Not all Compaq equipment is qualified to be shipped in the Rack 10000 series. | |
| | **NOTE**: Please see the Rack 10000 QuickSpecs for additional options and Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.html (Worldwide) | |
| | **NOTE:** For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower | |

| | | |
|---|---|---|
| **Keyboards and Monitors** | TFT7600 Rackmount Keyboard Monitor US | AG052A |
| | TFT7600 Rackmount Keyboard Monitor UK | AG053A |
| | TFT7600 Rackmount Keyboard Monitor GR | AG054A |
| | TFT7600 Rackmount Keyboard Monitor FR | AG055A |
| | TFT7600 Rackmount Keyboard Monitor IT | AG056A |
| | TFT7600 Rackmount Keyboard Monitor SP | AG057A |
| | TFT7600 Rackmount Keyboard Monitor DEN | AG058A |
| | TFT7600 Rackmount Keyboard Monitor NOR | AG059A |
| | TFT7600 Rackmount Keyboard Monitor SE/FI | AG060A |
| | TFT7600 Rackmount Keyboard Monitor SWI | AG061A |
| | TFT7600 Rackmount Keyboard Monitor PORT | AG062A |
| | TFT7600 Rackmount Keyboard Monitor BEL | AG063A |
| | TFT7600 Rackmount Keyboard Monitor JPN2 | AG064A |
| | TFT7600 Rackmount Keyboard Monitor RUS | AG065A |
| | TFT7600 Rackmount Keyboard Monitor INTL | AG066A |
| | 1U Rackmount Keyboard with USB, US | AG072A |
| | 1U Rackmount Keyboard with USB, UK | AG073A |
| | 1U Rackmount Keyboard with USB, GR | AG074A |
| | 1U Rackmount Keyboard with USB, FR | AG075A |
| | 1U Rackmount Keyboard with USB, ITL | AG076A |
| | 1U Rackmount Keyboard with USB, SP | AG077A |
| | 1U Rackmount Keyboard with USB, DEN | AG078A |
| | 1U Rackmount Keyboard with USB, NOR | AG079A |
| | 1U Rackmount Keyboard with USB, SE/FI | AG080A |
| | 1U Rackmount Keyboard with USB, SWI | AG081A |
| | 1U Rackmount Keyboard with USB, PORT | AG082A |
| | 1U Rackmount Keyboard with USB, BEL | AG083A |
| | 1U Rackmount Keyboard with USB, JPN2 | AG084A |
| | 1U Rackmount Keyboard with USB, RUS | AG085A |
| | 1U Rackmount Keyboard with USB, INTL | AG086A |

**NOTE:** For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower.

*Product Configuration*

| | | |
|---|---|---|
| **HP KVM Switch Options** | 2x1x16 IP Console Switch with Virtual Media | AF601A |
| | 4x1x16 IP Console Switch with Virtual Media | AF602A |
| | 2x16 Server Console Switch with Virtual Media | AF600A |
| | PS/2 Virtual Media Interface Adapter, 1 pack<br>**NOTE:** Requires PS/2 and one USB port on server. | AF604A |
| | Server Console Switch (KVM), 0 x 1 x 8 port | 336044-B21 |
| | Server Console Switch (KVM), 0 x 2 x 16 port | 336045-B21 |
| | PS/2 Interface Adapter, 1 pack | 262588-B21 |
| | PS/2 Interface Adapter, 8 pack | 262587-B21 |
| | USB Interface Adapter, 1 pack | 336047-B21 |
| | Serial Interface adapter - 1 Pack with power supply | 373035-B21 |
| | **NOTE:** Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm. | |
| | HP 1x4 Console Switch | AF611A |
| | HP PS2 Server Console Cable, 6 foot, 2-Pack | AF612A |
| | HP USB Server Console Cable, 6 foot, 2-Pack<br>**NOTE:** Required for supporting USB peripherals. | AF613A |
| | **NOTE:** For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm. | |

| | | |
|---|---|---|
| **HP Serial Console Server Options** | HP 16 Port Serial Console Server (worldwide) | AF101A |
| | HP 48 Port Serial Console Server (worldwide) | AF102A |
| | Serial Adapter, RJ45-DB9 DCE Female, 1 Pack | AF103A |
| | Serial Adapter, RJ45-DB9 DCE Female, 8 Pack | AF110A |
| | **NOTE:** Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm. | |
| | **NOTE:** For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm. | |

## Step 9 - Order HPTS Service Care Packs

Service Care Packs or warranty upgrades enhance the base hardware warranty provided with your HP ProLiant Storage Server. The Care Packs provide support for product software and operating system with extended hours of coverage and reduced response time. And Care Packs allow the customer to budget fixed cost support rather than variable costs that include parts and labor.
Note that the standard HP warranty ensures software media will be free of physical defect for a period of 90 days from delivery. However, all ProLiant Storage Servers come with a full year of 9 hours by 5 days software advisory and remedial software telephone support, new version license rights, and media and documentation distribution service. Extended hours of coverage and additional years of service are available should the customer require more support.
See "**Service and Support Upgrade options**" section for more information on available Care Packs for your ProLiant Storage Server.

*Memory*

**Standard Memory**
PC2-5300 Fully Buffered DIMMs (DDR2-667) with 4:1 and 2:1 interleaving available (interleaving requires identical DIMMs)

- 4 GB (2 x 2GB) low-power: Base, 1.16TB SAS, 4.5TB SATA, 6TB SATA, 1.8TB SAS, and 2.7TB SAS models
- 8 GB (4 x 2GB) low-power: SAN Gateway model

**Upgrading Memory and Memory Interleaving**
When upgrading memory, DIMMs 1A and 2A must match. DIMMs 3B and 4B, DIMMs 5C and 6C, and DIMMs 7D and 8D must match and must be installed as a pair. When DIMMs 1A and 2A are populated the system is automatically configured for 2:1 interleaving. When all 4 banks are populated the system is automatically configured for 4:1 interleaving. When four, six, or eight DIMMs are populated with identical DIMMs the system is automatically configured for bank interleaving.

**Maximum Memory**

- 32 GB (all models except SAN Gateway model)
- 64 GB (SAN Gateway model)

**Standard Memory Replaced with Optional Memory**
Up to 64 GB of memory is available with the removal of the standard memory and the optional installation of 8 GB PC2-5300 Fully Buffered DIMMs (DDR2-667) memory kits.

**NOTE:** Chart does not represent all possible configurations.

| | | Slot | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Configuration** | | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| **Standard (all models except SAN Gateway model)** | **4 GB** | **2 GB** | **2 GB** | **Empty** | **Empty** | **Empty** | **Empty** | **Empty** | **Empty** |
| **Standard (SAN Gateway model)** | **8 GB** | **2 GB** | **2 GB** | **2 GB** | **2 GB** | **Empty** | **Empty** | **Empty** | **Empty** |
| **Maximum (all models except SAN Gateway model)** | **32 GB** | **4 GB** | **4 GB** | **4 GB** | **4 GB** | **4 GB** | **4 GB** | **4 GB** | **4 GB** |
| **Maximum (SAN Gateway model)** | **64 GB** | **8 GB** | **8 GB** | **8 GB** | **8 GB** | **8 GB** | **8 GB** | **8 GB** | **8 GB** |

**NOTE:** In the online spare configuration, the ROM automatically configures the last populated bank as the spare memory. If only banks A and B are populated, bank B is the spare bank. If banks A, B, and C are populated, bank C is the spare bank, Online spare memory is configured through RBSU.
**NOTE:** Mirrored Memory uses mirrored banks to provide a high level of memory redundancy. Customer chooses to implement or not: User selectable via BIOS and default is off.

*Memory*

Following are memory options available from HP:

| | |
|---|---|
| 2 GB FBD PC2-5300 2 x 1 GB Low Power Single Rank Kit | 461826-B21 |
| 4 GB FBD PC2-5300 2 x 2 GB Low Power Dual Rank Kit | 461828-B21 |
| 8 GB FBD PC2-5300 2 x 4 GB Low Power Dual Rank Kit | 466440-B21 |
| 1 GB FBD PC2-5300 2 x 512 MB Single Rank Kit | 397409-B21 |
| 2 GB FBD PC2-5300 2 x 1 GB Dual Rank Kit | 397411-B21 |
| 4 GB FBD PC2-5300 2 x 2 GB Dual Rank Kit | 397413-B21 |
| 8 GB FBD PC2-5300 2 x 4 GB Dual Rank Kit | 397415-B21 |
| 16 GB FBD PC2-5300 2 x 8 GB Dual Rank Kit | 413015-B21 |
| 64 GB FBD PC2-5300 8 x 8 GB Dual Rank Kit | 495604-B21 |

In Advanced ECC mode, FBDIMMs must be populated as specified in the following table:

| Configuration | Bank A<br>1A and 3A | Bank B<br>5B and 7B | Bank C<br>2C and 4C | Bank D<br>6D and 8D |
|---|---|---|---|---|
| 1 | X | - | - | - |
| 2 | X | X | - | - |
| 3 | X | X | X | - |
| 4 | X | X | X | X |

**Online spare memory configuration**

Online spare FBDIMM configuration requirements (in addition to general configuration requirements):

- When only bank A is being used, it must be fully populated with dual-rank FBDIMMs.
- If banks A and C are being used, they must be fully populated.
- If installed, bank A and bank C must contain FBDIMMs with identical part numbers.
- If installed, bank B and bank D must also contain FBDIMMs with identical part numbers

In online spare mode, FBDIMMs must be populated as specified in the following table:

| Configuration | Branch 0<br>Bank A<br>1A and 3A | Branch 0<br>Bank C<br>2C and 4C | Branch 1<br>Bank B<br>5B and 7B | Branch 1<br>Bank D<br>6D and 8D |
|---|---|---|---|---|
| 1* | X | - | - | - |
| 2 | X | X | - | - |
| 3 | X | X | X | X |

*Configuration 1 is only supported if using bank A, populated with dual-rank FBDIMMs. All FBDIMMs 1GB and above are dual-rank.
After installing FBDIMMs, use RBSU to configure the system for online spare memory support.

*Memory*

**Mirrored memory configuration**

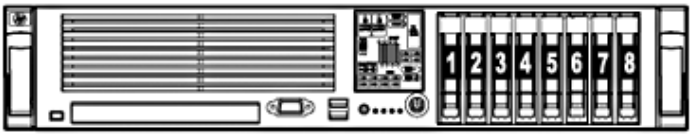
Mirrored memory FBDIMM configuration requirements (in addition to general configuration requirements):

- Banks A and B must be fully populated.
- Bank A and bank B must contain FBDIMMs with identical part numbers. If installed, bank C and bank D must also contain FBDIMMs with identical part numbers.

When using mirrored memory mode, FBDIMMs must be populated as specified in the following table:

| Configuration | Bank A<br>1A and 3A | Bank B<br>5B and 7B | Bank C<br>2C and 4C | Bank D<br>6D and 8D |
|---|---|---|---|---|
| 1 | X | X | - | - |
| 2 | X | X | X | X |

**NOTE:** After installing FBDIMMs, use RBSU to configure the system for mirrored memory support ("Configuring mirrored memory" on page 57).




1-8 Eight SFF SAS hot plug hard drive bays

## Drive Support

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| **Removable Media** | | | |
| Slimline DVD-ROM Drive | 1 | Slimline bay | Integrated IDE |

**Hard Drives** (Internal Storage)

**Hot Plug 2.5" (SFF) SAS**

| | Quantity Configured | Position Supported | Controller |
|---|---|---|---|
| 146GB 3G SAS 10K SP<br>146GB 3G SAS 10K DP<br>72GB 3G SAS 10K SP<br>72GB 3G SAS 10K DP<br>72GB 3G SAS 15K SP<br>72GB 3G SAS 15K DP<br>36GB 3G SAS 15K SP<br>36GB 3G SAS 15K DP | 2 x 72GB 10k standard (all models except 1.16TB SAS model)<br><br>Up to 6 additional internal drives supported | Mirrored O/S drives installed in slots 1 & 2 | Smart Array P800 Controller (all models except SAN Gateway model)<br>Smart Array P400 Controller (SAN Gateway model) |
| | 8 x 146GB standard (1.16TB SAS model) | 1-8 | Smart Array P800 Controller |

**Hot Plug 2.5" (SFF) SATA**

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| 60GB SATA 5.4K<br>120GB SATA 5.4K | Up to 6 in empty slots | 3-8 | Smart Array P800 or P400 Controller |

*Storage*

**External Storage**

| | Quantity Supported | Position Supported | Controller |
|---|---|---|---|
| Modular Smart Array 60 | Up to 8 per Smart Array P800 controller | External | Smart Array P800 Controller<br>Smart Array E500 controller |
| Modular Smart Array 70 | Up to 4 per Smart Array P800 controller | External | Smart Array P800 Controller<br>Smart Array E500 controller |
| Modular Smart Array 50 Enclosure | 2 per connector (supports 1+1 cascading) | External | Smart Array P800 Controller |
| HP 2000sa Modular Smart Array Controller | Up to 4 | External | HP SC08Ge Host Bus Adapter |

Modular Smart Array 2000fc: http://h18000.www1.hp.com/products/quickspecs/12991_div/12991_div.html (Worldwide)

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**Maximum Raw Storage Capacity**

| | |
|---|---|
| Internal | 1.16TB raw (8 x 146GB SAS SFF) |
| External | 96TB raw (96 x 1TB SATA) [1 x SA P800 connected to 8 x MSA60 full of 1TB SATA HDDs] |
| Total | 97.16TB raw (8 x 146GB int. + 96 x 1TB ext.) |

---

**Factory RAID Configuration**

**NOTE:** Where applicable, user storage is factory configured into 2TB (maximum) logical drives to accommodate Microsoft iSCSI Software Target (which currently does not support either dynamic disks or logical drives greater than 2TB on basic disks). However, Windows Storage Server 2003 R2 or Windows Unified Data Storage Server 2003 O/S and Smart Array P800 and P400 controllers do support creation of logical drives greater than 2TB using GUID Partitioning Table (GPT) disk architecture.

**Base, 4.5TB SATA, 6TB SATA, 1.8TB SAS, 2.7TB SAS, and SAN Gateway models**

| | Volume | RAID level | Physical Drives |
|---|---|---|---|
| Logical Disk 1 | Operating System | RAID 1 | 0-1 |
| Logical Disk 2 | DON'T ERASE recovery partition | RAID 1 | 0-1 |

**1.16TB SAS model**

| | Volume | RAID level | Physical Drives |
|---|---|---|---|
| Logical Disk 1 | Operating System | RAID 5 | 0-7 |
| Logical Disk 2 | DON'T ERASE recovery partition | RAID 5 | 0-7 |
| Logical Disk 3 | User Data | RAID 5 | 0-7 |

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*Storage*

**Tape Drives, Tape Autoloaders, and Tape Libraries**

**NOTE:** For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/division/10233.html (Worldwide)

**NOTE:** For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders & Tape Libraries listed below, please see the following: http://h18000.www1.hp.com/products/quickspecs/division/10809.html (Worldwide)

**NOTE:** SAS Tape Drives: Connecting hard drive cage and SAS tape to the same SAS Controller using split cable (supplied with tape drive) deactivates 1 of the hard drive bays. Actual hard drive bay deactivated depends on where split cable plugs into SAS drive connector. Example: 3x SAS cable connector plugged into SAS drive connector (5-8) on the back of the hard drive cage would mean drive bay 8 is deactivated.

**NOTE:** For complete listing of tape drive offerings see
http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html
For recommended tape drive offerings for this ProLiant server see the following:

| | Position Supported | Controller | Part Number |
|---|---|---|---|
| **HP StorageWorks SCSI Tape Drives, External**<br>LTO-1 Ultrium 232<br>LTO-2 Ultrium 448<br>LTO-3 Ultrium 960<br>LTO-3 Ultrium 920<br>LTO-4 Ultrium 1760<br>LTO-4 Ultrium 1840<br>DAT 40<br>DAT 72<br>DAT 160<br>1U Rack-Mount Kit<br>3U Rack-Mount Kit | External | HP SC11Xe Host Bus Adapter | 412911-B21 |
| **HP StorageWorks USB Tape Drives, External**<br>DAT 40 USB<br>DAT 72 USB<br>DAT 160 USB<br>1U USB Rack-Mount Kit | External | USB 2.0 Port | N/A |
| **HP StorageWorks SAS Tape Drives, External**<br>DAT 160 SAS<br>LTO-2 Ultrium 448 SAS<br>LTO-3 Ultrium 920 SAS<br>LTO-4 Ultrium 1760 SAS<br>LTO-4 Ultrium 1840 SAS<br>1U Rack-Mount Kit<br>3U Rack-Mount Kit | External | HP SC44Ge Host Bus Adapter<br>**NOTE:** Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements. | 416096-B21 |
| **HP StorageWorks SCSI Tape Automation, External**<br>DAT 72X10 Autoloader<br>1/8 G2 Autoloader<br>MSL2024<br>MSL4048 | External | HP SC11Xe Host Bus Adapter<br>HP U320e SCSI Host Bus Adapter<br>**NOTE:** Only valid for MSL tape libraries. | 412911-B21<br>AH627A |

*Storage*

| | | | |
|---|---|---|---|
| **HP StorageWorks SAS Tape Automation, External**<br>1/8 G2 Autoloader<br>MSL2024<br>MSL4048 | External | HP SC44Ge Host Bus Adapter<br><br>**NOTE:** Please visit http://www.hp.com/go/connect for details about minimum SAS controller firmware version and SAS cabling requirements. | 416096-B21 |
| **HP StorageWorks Fibre Tape Libraries, External**<br>MSL2024<br>MSL4048 | External | Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information | N/A |
| **HP StorageWorks D2D Backup Systems**<br>D2D120<br>D2D130<br>D2D2503i<br>D2D4004i | External | Embedded Network Controller | N/A |

*Power Specifications*

| **Power Supply Specification – AC** | **Part number** | | 380622-001 | | | |
|---|---|---|---|---|---|---|
| | **Spare Kit** | | 403781-001 | | | |
| Operational Input Voltage Range (Vrms) | 90 to 264 | | | | | |
| Frequency Range (Nominal) (Hz) | 47 to 63 (50/60) | | | | | |
| Nominal Input Voltage (Vrms) | **100** | **120** | **208** | **220** | **230** | **240** |
| Max Rated Output Wattage Rating | 800 | 850 | 1000 | 1000 | 1000 | 1000 |
| Nominal Input Current (A rms) | 10.0 | 8.8 | 5.85 | 5.5 | 5.2 | 4.97 |
| Max Rated Input Wattage Rating (Watts) | 980 | 1035 | 1193 | 1186 | 1172 | 1169 |
| Max. Rated VA (Volt-Amp) | 1000 | 1056 | 1217 | 1210 | 1196 | 1193 |
| Efficiency (%) | 81.5 | 82 | 84 | 84 | 85 | 85.5 |
| Power Factor | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 | 0.98 |
| Leakage Current (mA) | 0.44 | 0.52 | 0.91 | 0.96 | 1.00 | 1.04 |
| Max. Inrush Current (A peak) | 30 | 30 | 30 | 30 | 30 | 30 |
| Max. Inrush Current duration (mS) | 3 | 3 | 3 | 3 | 3 | 3 |

| **Power Supply Specification - DC** | **Part number** | | 433634-B21 |
|---|---|---|---|
| | **Spare Kit** | | 419613-001 |
| Operational Input Voltage Range (Vrms) | -36.0 to -72.0V DC | | |
| Frequency Range (Nominal) (Hz) | DC | | |
| Nominal Input Voltage (Vrms) | 36 | 48 | 72 |
| Max Rated Output Wattage Rating | 1210 | 1210 | 1210 |
| Nominal Input Current (A rms) | 38 | 29 | 20 |
| Max Rated Input Wattage Rating (Watts) | 980 | 1035 | 1193 |
| Max. Rated VA (Volt-Amp) | 1368 | 1392 | 1440 |
| Efficiency (%) | 87.6 | 87.6 | 86 |
| Max. Inrush Current (A peak) | 60 | 60 | 60 |
| Max. Inrush Current duration (mS) | 100 | 100 | 100 |

**NOTES:**
- To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at url: http://h30099.www3.hp.com/configurator/calc/Power%20Calculator%20Catalog.xls
To drill down to calculators:

- Click on: "ProLiant Servers"
- Click on the Server of interest. Example: DL380 G5
- Click on: "Power Calculator" link. (You may need to scroll down to see it)

| | | | |
|---|---|---|---|
| **System Unit** | **Dimensions** (HxWxD) (with feet/bezel) | 3.38 x 17.54 x 26.01 in (8.59 x 44.54 x 66.07 cm) | |
| | **Weight** (approximate) | Maximum | 60 lb (27.22 kg) |
| | | Minimum | 47.18 lb (20.41 kg) |
| | **Input Requirements** (per power supply) | Rated Line Voltage | 100-132 VAC, 200-240 VAC |
| | | Rated Input Current | 10A (100VAC), 10A (120VAC), 6.1A (200VAC) |
| | | Rated Input Frequency | 50 to 60 Hz |
| | | Rated Input Power | 1000/1056/1205 W |
| | **BTU Rating** | BTU/HR | 3490/3680/4150 |
| | **Power Specifications** | To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at URL: http://h30099.www3.hp.com/configurator/powercalcs.asp.<br>To drill down to calculators:<br>- Click on: "ProLiant Servers"<br>- Click on the Server of interest. Example: DL380 G5<br>- Click on: "Power Calculator" link. (You may need to scroll down to see it.) | |
| | **Power Supply Output Power** (per power supply) | Rated Steady-State Power | 800/850/1000 W |
| | | Maximum Peak Power | 800/850/1000 W |
| | **Temperature Range** | Operating | 50° to 95° F (10° to 35° C) at sea level with an altitude de-rating of 1.8° F per 1000 ft (1.0° C per 304.8 m) to 10,000 ft (3048 m) no direct sunlight allowed. Maximum rate of change is 18° F/Hr (10° C/Hr). Upper operating limit is 10,000 ft (3,048 m) or 70 Kpa/10.1 psia. System performance may be reduced if operating with a fan fault or above 30° C. |
| | | Non-operating | -22° to 140° F (-30° to 60° C) Maximum rate of change is36° F/Hr (20° C/Hr). Upper non-operating limit is 30,000 ft (9,144 m) or 30.3KPa/4.4 psia. |
| | **Maximum Wet Bulb Temperature** | 101.7° F (38.7° C) | |
| | **Relative Humidity** (non-condensing) | Operating | 10% to 90% relative humidity (Rh), 28° C maximum wet bulb temperature. |
| | | Non-operating | 5% to 95% relative humidity (Rh), 38.7° C maximum wet bulb temperature. |
| | **Acoustic Noise** | Idle Minimum (Fixed Disk Drives Spinning) | |
| | | **L** WAd (BELS) | 6.1 |
| | | **L** pAm (dBA) | 44 |
| | | Operating Minimum (Random Seeks to Fixed Disks) | |
| | | **L** WAd (BELS) | 6.1 |
| | | **L** pAm (dBA) | 44 |

*Technical Specifications*

| | | |
|---|---|---|
| **Smart Array P400 Controller** | **Disk Drive and Enclosure Interface** | 3G SAS (Serial Attached SCSI)<br>1.5G SATA (Serial Advanced Technology Attachment) |
| | **SAS Connectors** | 2 internal (SFF8484) x4 wide port connectors |
| | **Cache Memory Speed** | DDR2-533MHz with 40 or 72-bit wide bus provides up to 4.2 GB/s maximum bandwidth. |
| | **Server Interface** | x8 2.5G PCIe provides 2GB/s maximum bandwidth. |
| | **SAS Speed** | x8 3G SAS provides 2.4GB/s maximum bandwidth. |
| | **Cache Memory** | 40-bit 256MB cache (72-bit 512MB module upgrades available); ECC protection, battery-backed, and transportable |
| | **Logical Drives Supported** | Up to 32 logical drives |
| | **Maximum Logical Drive Capacity** | 3TB (6 x 500GB) |
| | **Host Memory Addressing** | 64-bit, supporting greater than 4GB server memory space |
| | **RAID Support** | RAID 6 with ADG (Advanced Data Guarding) requires Battery Backed Write Cache Upgrade<br>RAID 5 (Distributed Data Guarding)<br>RAID 1+0 (Striping & Mirroring)<br>RAID 0 (Striping) |

| | | | |
|---|---|---|---|
| **Two Embedded NC373i Multifunction Server Adapters** | **Network Interface** | 10Base-T/100Base-TX/1000Base-TX | |
| | **Compatibility** | IEEE 802.3 10Base-T | |
| | | IEEE 802.3ab 1000Base-T | |
| | | IEEE 802.3u 100Base-TX | |
| | **Data Transfer Method** | PCI Express, four lanes (x4) | |
| | **Network Transfer Rate** | 10Base-T (Half-Duplex) | 10 Mb/s |
| | | 10Base-T (Full-Duplex) | 20 Mb/s |
| | | 100Base-TX (Half-Duplex) | 100 Mb/s |
| | | 100Base-TX (Full-Duplex) | 200 Mb/s |
| | | 1000Base-TX (Half and Full-Duplex) | 2000Mb/s |
| | **Connector** | Two RJ-45 | |
| | **Cable Support** | 10Base-T | Categories 3, 4 or 5 UTP; up to 328 ft (100 m) |
| | | 100Base-TX | Category 5 or higher UTP; up to 328 ft (100 m) |
| | | 1000BaseTX | Category 5 or higher UTP; up to 328 ft (100 m) |

**NOTE:** The NC373i Multifunction Gigabit Server Adapters support the installed Microsoft Windows Server 2003 Scalable Networking Pack, which enables TCP Chimney offload, Receive-side Scaling (RSS), and Network Direct Memory Access (NetDMA) features.

*Technical Specifications*

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For hard drives, 1 GB = 1 billion bytes. Actual formatted capacity is less.